PLANNING AND IMPLEMENTING CHANGE IN ORGANISATIONS – A CONSTRUCT FOR MANAGING CHANGE PROJECTS

Harri Lanning

Abstract

The research was about change management in organisations and, more precisely, practical constructs for carrying out change projects. In the early phases of the research, it became obvious that change efforts very often fail. Later, many different sources supported the existence of the need for a new construct for project managers to facilitate and support them planning and implementing change projects.

The research was thus focused on answering three research questions: (1) Is there a need for a new practical construct for change project managers helping them to plan and implement change projects? If yes, (2) is it possible to develop such a construct? If yes, (3) what should the construct be like? In addition to specifically answering the research questions, the objective was to gain new understanding on constructs assisting project managers to carry out change projects.

The research represented a hermeneutic, constructive case study, aiming at the understanding of the phenomenon and constructing a useful and theoretically grounded solution for a relevant problem. The study also belonged to design sciences, had a normative flavour and followed the principles of technical norm.

The objective of the research was to find useful solutions for practitioners and new knowledge for scholars. The process and the results were not obtained purely via objective procedures but, rather, subjectivity and interpretations played a certain role in finding new knowledge and solutions. The research process was iterative in nature. Unambiguous, indisputable causal relationships, stated in mathematical formulas and tables were not sought after. Emphasis was placed on solving problems and enhancing the knowledge on the area of the study.

The main phases of the research comprised preunderstanding, constructing and testing. First, change management and project management literature was studied and a comprehensive picture of existing theories for changing organisations was offered. The most important empirical research material included three case studies in the preunderstanding and twelve in the testing phase. Seven cases were action research cases; i.e., I had a role as a consultant in the project. Altogether 136 interviews were carried out in the course of the study. Questionnaires, archives, direct observations and quantitative performance data were also utilised.

The research questions were answered by first designing a novel construct for change project managers and then by evaluating and discussing the contents, usability and usefulness of the construct. The theoretical novelty of the construct and its connection to existing theories was also defined.

As a result, the need for a new practical construct for change project managers became obvious. It was also concluded that it was possible to design and to develop a practical, comprehensive and generic construct both easy to use and useful for change project mangers. The practical need was answered by developing and describing a new construct and by demonstrating its usefulness. The most significant theoretical contribution was enhanced knowledge and new understanding about constructs for assisting project managers to carry out change projects. As a conclusion, a new framework for designing a construct to facilitate carrying out change projects was introduced.

Key words: change management, project management, organisational development, dissemination of innovations

Foreword

This dissertation is based on the work carried out as a part of the KEPRO (Effective and Efficient Change Project Implementation) research project at TAI Research Centre at Helsinki University of Technology (HUT) Finland. The project was launched due to our interest in change management and new practical solutions for managing change in organisations, in particular. During the course of the dissertation process, there have been several people who have contributed to my research work and to whom I am very grateful.

I express my sincere thanks to Professor Eero Eloranta at HUT, who played an important role as my supervisor throughout the research process and my entire career at HUT. I am also indebted to Professor Eila Järvenpää at HUT and Dr. Jillian McBryde at the University of Strathclyde who read many different versions of the dissertation and contributed with very detailed comments and improvement suggestions along with more fundamental ideas.

My warmest thanks go to Dr. Antti Salminen. I was privileged to work closely with Antti for more than five years and he is the one with the most significant external contribution to this dissertation. Especially in the early phases of the research, we had countless discussions over all issues concerning change management and worked together in several case studies. It is thus hopeless to even try to define the role Antti has played in this dissertation and in my career at HUT, in general.

The rest of our research team, Marko Korpi-Filppula, Päivi Kutilainen, Carita Lahti, Kaj Rintala, Mikko Roiha and Suvi Toivanen also contributed to the work in a rich manner. When designing the first versions of the construct, I had the pleasure to work closely with Päivi and, consequently, to exchange ideas with an experienced developer of organisations. My closest colleague in the testing phase was Carita whose contribution was invaluable as she carried out most of the test interviews, challenged my initial interpretations and always brought in new approaches for finding answers to the research problems. Our whole team worked together as a team in product development, in case studies and in writing research papers.

I would also like to express my thanks to all those people at HUT with whom I have worked and exchanged ideas during the past six years. Special acknowledgements belong also to all the case organisations and interviewees I have worked with. Further, my eight-month stay in Glasgow, at the University of Strathclyde, provided me with the chance to concentrate on writing the thesis and to become acquainted with many new researchers. Room 103 was a very cheerful and a stimulating environment for both writing and carrying out discussions covering all kinds of matters.

I wish to thank my preliminary examiners Professor Pekka Kess from the University of Oulu and Dr. Matleena Pankakoski for their insightful comments during the review process. Thanks go also to Jim Rowland for his speedy revision of my English in this manuscript. I am also very thankful for the financial support I have received from the Academy of Finland, the Finnish Graduate School of Industrial Management, the Finnish Work Environment Fund and the Research Foundation of HUT.

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1 INTRODUCTION

In this chapter the backgrounds and motivations, as well as the scope and restrictions of the study are discussed. The research issue is also discussed.

1.1 Background and motivation of the study

You have most evidently heard the phrase ”There is nothing permanent except change”. Doesn’t it make you wonder why is it so difficult to bring about change in organisations? Furthermore, would it be somehow possible to help organisations develop their operations, reorganise themselves and adopt new systems and ways of working? In about 1995, this was the question intriguing me as I started to study closer the subject of organisational change.

The dynamic business environment today requires frequent changes both in the way organisations operate and in the organisational structure. Turner (1999, 2; see also Abrahamson 2000, 75) notes that change is endemic and has become an essential determinant in maintaining a company’s competitive edge. In his opinion, the old bureaucratic style of management is incapable of meeting the challenges of changing environment.

In a study of changes facing Australian corporations, 65 percent of human resource managers assessed that the extent of change their organisation had gone through during the last three years was either major or radical (Waldersee and Griffiths 1996, 6). Eichelberg (1994, 87) noted already in 1994 that it had never been more important for companies to run successful change projects. Companies must empower people and examine what they could do to improve company’s profitability and standing on the market (Eichelberger 1994, 87). The future of organisations may depend on the success of the change projects and thus great effort is currently put into implementing them. Increased productivity, shorter throughput and delivery times, simpler processes, elimination of non value adding processes and increased employee well-being are typical examples of goals in organisational changes (Järvenpää and Eloranta 2000; see also Barker 1998, 549; Salminen and Perkiömäki 1998, 21).

Originally, the motivation to go deeper into the subject rose from my engagements in developing and studying the development of organisations. Despite the importance of developing organisations, many change efforts simply fail. They fail to produce the performance enhancements that were planned or they end up months late or with costs remarkably more than budgeted. Some change efforts can even cause harm to the overall performance of the company. As a result of my observations, I summarised that when looking at development efforts from a distance and seeing all the different phases from tentative ideas and analysis delineation to project assessment and conclusion, it is neither carrying out analysis nor finding new breakthrough solutions that act as bottlenecks in the development process. At that time my hypothesis was thus that it is the *implementation phase and effective tools* for carrying out the implementation where more attention should be paid to and where new constructs should be introduced and applied.

According to a 1991 survey of US electronics companies, only 37% of the organisations engaged in total quality programs reported that they had succeeded improving quality defects by 10% or more (Schaffer and Thomson 1992, 81). An estimated 50-70% of reengineering efforts never reach their goals (Hammer and Champy 1993, 214). In the early 1980s, a survey of management consultants summarised that fewer than 10 percent of well and clearly formulated new strategies were successfully implemented (Kaplan and Norton 2001, 1). A recent study of Finnish small and medium sized companies revealed somewhat more encouraging results: only 20% of the companies under study reported that the project had

failed to produce the anticipated productivity improvements. However, even in this study the financial data of the companies reporting to have succeeded in their development efforts didn't show any statistically significant improvement in productivity or profitability (Salminen and Perkiömäki 1998).

Further evidence for the need of a guiding and facilitating construct for organisational change was received from two independent marked surveys carried out by our research team[1] among Finnish industry and consultants in 1997. These studies are further elaborated later in Chapter 5. Surveys revealed that about half of the respondents who were all working with internal change projects did not have sufficient knowledge of how to carry out change in organisations. One of the main results in both studies was thus that there is a clear need for a practical construct, not only a textbook, for carrying out change projects. Some large consulting and industrial companies have developed and tailored tools for their own purposes and specific needs, but there is a lack of generic, comprehensive, overt and published material. (Chapter 5)

Kotter (1996, 4; see also Barker 1998, 550) begins his book with highlighting the fact that most of the transformation efforts undertaken in firms end up with a failure, i.e., producing only disappointment, frustration, burned-out and scared employees, and waste of resources. However, according to Kotter a significant amount of the waste and failures could be avoided, if only more energy and attention was put into avoiding the most common and biggest problems transformation efforts are typically facing.

To summarise, change project managers/leaders[2] seem to need an effective construct to help them successfully carry out change projects in the dynamic, continuously changing business environment. A construct that helps overcome the greatest obstacles and that offers guidance to avoid problems even before they occur would probably be of great importance to those engaged in change project management.

One question that puzzled me at that time was, if it was *possible* to construct a tool for change project management, in the first place. There were plenty of tools for project management, in general, but they were designed for the more "traditional" kind of projects, such as construction and investment projects. Secondly, if it was possible to develop a tool, what should it be like, i.e., what should it contain and what should the structure be like? These important questions motivated me to study the subject a little bit closer. The objectives of this research were:

1. to design a novel construct for change project mangers, and
2. to enhance the knowledge and to gain new understanding on constructs assisting project managers to carry out change projects.

The latest version of the construct (version 03) was designed in the form of a 132-page four-colour manual and a CD-ROM disc. In version 03, the planning and implementation of a

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[1] The composition of our research team is explained in Chapter 4.3.

[2] Kotter (1996) refers regularly to leadership and management, obviously because of the notions he has already presented in his previous books. The picture is seemingly black and white: As if people could be divided into two separate categories far from each other. Kotter does mention that people can eventually learn new skills but the basic message is that you are either a leader or a manager and that the former ones are needed in transformation efforts, in particular. I would not make such a strict distinction between these two strategies of changing organisations. Management and leadership are overlapping concepts and definitely also support each other. Good management helps facilitate excellent leadership. For instance, it is easier to communicate vision and spread it around if you have a good action plan for doing it. Later in this thesis I talk about "project managers" when referring to people responsible for the project planning and implementation.

change project is presented by fourteen phases that roughly describe the sequence of different phases in a change project. Each phase forms a section in the construct consisting of modules such as document templates and group work guidelines needed or helpful while moving ahead in the path of development.

This study was carried out as a part of a four-year KEPRO –research program (1996-1999) concentrating on finding out the most common problems and key success factors of change project implementation. The program was a part of National Productivity Program and was conducted at the TAI Research Centre, Helsinki University of Technology. Again, the KEPRO –program was based on the finding that although organisational and operational change had become an integral part of the everyday life in every industrial company, there were no efficient constructs or practical tools for change project implementation.

1.2 Research issue

All research projects should begin with the definition of the problems or issues[3] to be studied. That is followed by the research design, which explains the connection between research questions, empirical data used and different techniques applied for both collecting and analysing the data and finally making inferences. (Yin 1984, 61; see also Stake 1995, 18)

Originally, the research issue was change management in organisations and it gradually focused on *practical constructs* for carrying out these change efforts. However, the issue was not product development or innovation dissemination, however interesting and important issues they might also have been. Neither was it establishing new approaches for change management or finding out success factors that would ensure the success of change projects. In the beginning of my research, I was quite open to all emerging themes around the issue, yet at some stage my interest focused on practical constructs as critical success factors in organisational change projects had already been studied quite widely (e.g., Salminen 2000). Thus the tentative version of the first research question was as follows:

Is there a need for a new practical construct for change project managers to facilitate them to plan and implement change projects?

Before entering the research, I was interested in exploring if the problem really existed, i.e., if there was a need for a novel construct or tool for change project managers. First, I studied existing theories and research results related to the research issue. The purpose was to increase my preunderstanding of the subject and to find relevant and potentially novel research questions around the problem domain. So, at that time it was not quite clear to me just what I wanted to study, yet I already had some presumptions and areas of interest. Thus the objective was first to discover more about organisational change, change projects and constructs for carrying change in organisations. This process is described in Chapters 2 and 5.

3 Stake (1995, 18) constructs a hierarchical structure for developing good research questions. The structure contains several different layers and Stake even distinguishes and defines various kinds of categories for problems, issues, assertions and questions. Issues define the area of interest in general, and the purpose of them is to draw attention to the most fundamental problems and concerns in the research. However, he also admits that sometimes the rich variety of terms and definitions may only be confusing and it is hard to distinguish e.g., issues from research problems (Stake 1995, 18).

1.3 Scope of the thesis

Figure 1 elaborates the scope of the thesis and the area of interest in the research. There are many interesting issues and topics around innovations and new constructs and thus it is important to focus on only selected issues.

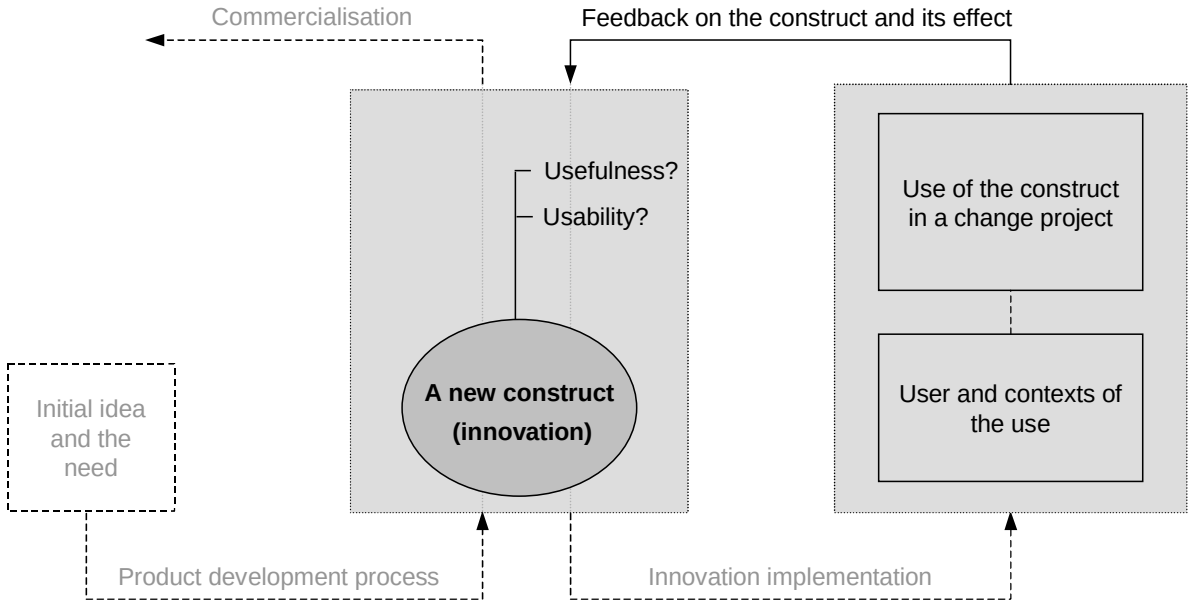

Figure 1 Scope of the research (shaded areas) reflected against issues related to innovations

Before sharpening the focus of this research, I first introduce three interesting themes, which are *not* the main issues in this thesis. The first one is product development and commercialisation. This thesis introduces the development process of a new construct as it brings in more transparency in the reporting and thus makes it easier for the reader to judge the reliability and the validity of the research outcome. The purpose, however, is not to study and put forward new solutions for product development and commercialisation (See more about the issue e.g., in Koivula 1998.).

The second interesting issue would have been innovation implementation/adoption and knowledge sharing in organisations. In other words, how to improve the process of gaining targeted organisational members' appropriate and committed use of a new construct. This issue is slightly covered in the thesis because understanding factors that affect the success of innovation implementation is important for assessing the effectiveness of the new construct. (See more about the issue e.g., in Pankakoski 1998)

The third plausible major issue in this thesis was organisational change, i.e., what are the most critical success factors in changing organisations. Although the main outcome of the research is not a new set of critical success factors, the issue is handled to some extent for two reasons. First, an overview on existing frameworks on organisational change combined with my own preliminary studies on success factors form one basis for designing a new practical construct. Secondly, a literature review makes it possible later to link the contents of the construct to the existing theories on change management. Critical success factors are thus discussed in several different occasions in the thesis. However, I did not choose it to be my main research issue as the problem domain was already quite thoroughly studied (e.g., Salminen 2000).

The main issue in this thesis is to learn more about practical constructs for change project managers to facilitate them to plan and implement change projects. “To learn more about” means here finding out if there is a need for a new practical construct. Another interesting question is whether it is possible to design such a construct in the first place. More precisely, the emphasis is on defining and describing a construct, that is easy to use, effective, and useful for planning and implementing changes in organisations. The purpose is not to study the construct, its contents, its structure, the user of the construct, and the environment the construct is used in as separate entities. On the contrary, a holistic view is applied and thus one purpose is to find out how these issues relate to each other.

As already mentioned, the scope of the thesis is restricted to the planning and implementing the changes and solutions to reach the desired state (Figure 2). The thesis does not cover strategic decisions on choosing the desired state of the organisation. Neither does it take any stand on choosing suitable means and solutions to move the organisation to the desired state.

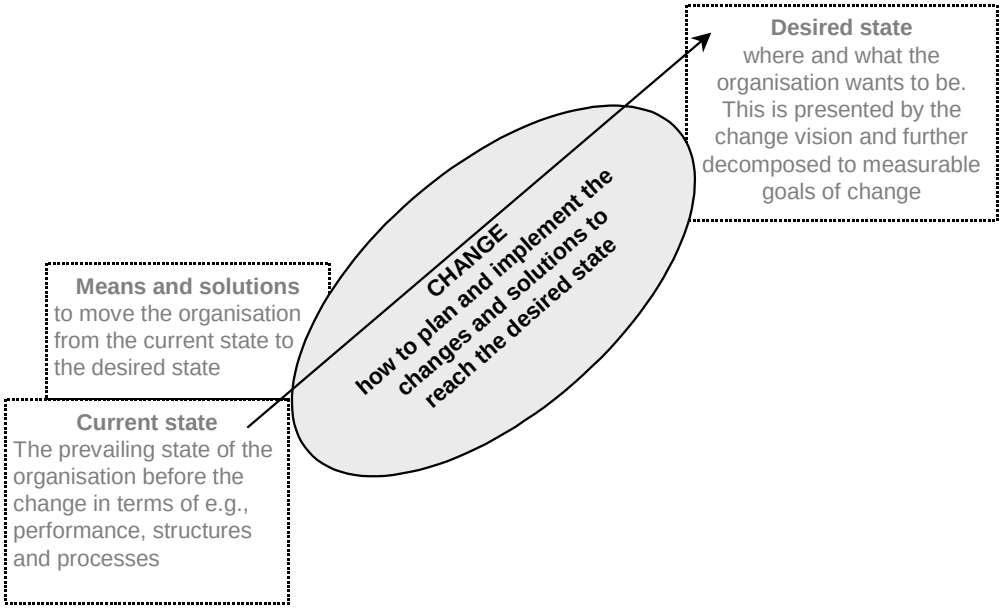

Figure 2 Scope of the research (shaded) reflected against issues related to change efforts in organisations (Adapted from Lanning et al. 1999)

1.4 Structure of the thesis

In Chapter 1, the backgrounds and motivations, as well as the scope and the restrictions of the study are discussed. The research issue, that is, the problem domain of the research is introduced to give the reader an idea of the contents of the research and its reporting. Moreover, the relevance of the research issue is discussed. (Figure 3)

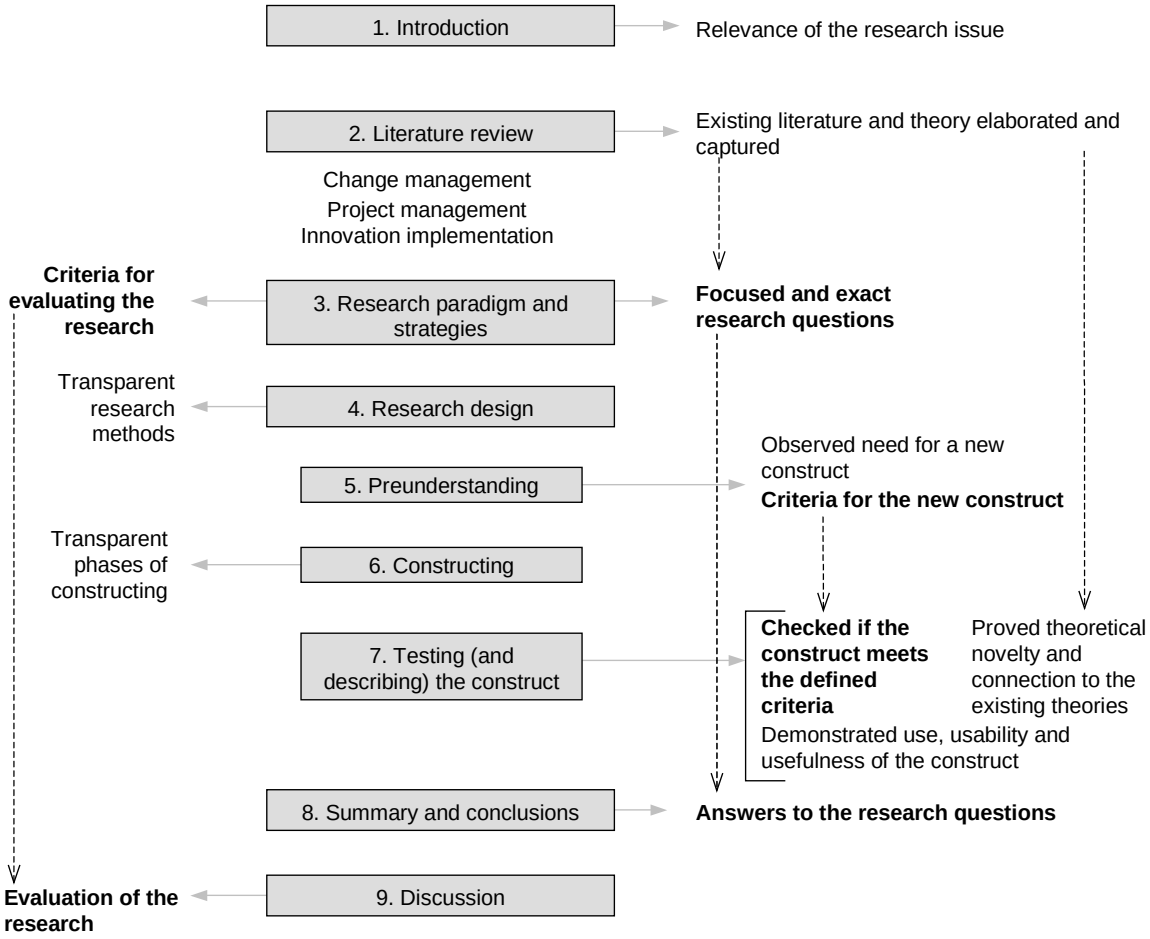

Figure 3 Structure of the thesis

Chapter 2 captures and reports relevant theory related to the research issue. The purpose is (1) to further elaborate the relevance of the research issue, (2) to offer basis for defining relevant research questions, and (3) to summarise the existing theories on the research issue for later evaluation of the research outcome and for designing the contents and the structure of the construct.

An overall view on organisational change is presented by first (Chapter 2.1) introducing the most relevant theories of organisational change. Light is shed on issues such as reasons behind organisational change, phase models of change, radical vs. incremental change, and planned change, as a particular way of changing organisation.

Chapter 2.2 starts analogously to the previous one by introducing the most relevant theories and notions of the subject concerned, this time project management (PM). PM theories are followed by the discussion of change projects forming a specific field of projects. Project management elements that should particularly be emphasised in change projects are elaborated and their use in the designed construct is grounded. Finally, some light is shed on the issue of assessing projects and development projects in particular.

The contents of *Chapters 2.3* has an essential role in the thesis since the tangible research outcome (construct) is basically built on critical success factors in change projects. Hence, a thorough insight into the subject is provided by introducing results

from different studies and by combining the main ideas and opinions on critical steps, phases, and actions from a comprehensive literature review. This material is later used for connecting the construct to the existing theories.

Chapter 2.4 offers a review on innovation implementation. Although the issue of the research was not about knowledge sharing, innovation adoption or knowledge transfer, a summary of the issue is offered in this chapter. The chapter is significant for offering approaches for case analysis introduced later in the thesis. For understanding the cases, it was important to know how new constructs were implemented and which factors had an influence on the success of the implementation.

Exploring the existing literature made it possible to sharpen the focus of the research and to decompose more detailed research questions from the research problem. Hence, *Chapter 3* starts with defining and discussing research questions of the thesis. Then, it plunges into the literature review by shedding some light on different paradigms and research strategies relevant to the research problem. The objective of this chapter is not to provide new typological structures but simply to offer a summary of existing notions and statements and also to define the paradigms and strategies used in this thesis. The chapter forms a solid basis for choosing the criteria for evaluating the research.

The research design is introduced in *Chapter 4.* More precisely, the processes of both data collection and its refinement stand out clearly, as different phases of the research are described. The objective is to offer the reader an overview on how I received the data needed for the research, from which sources and by which methods data was generated and, finally, how the interpretation of data was carried out. The main phases of the research comprise preunderstanding, constructing and testing. In *Chapter 4*, the main phases are only briefly introduced. The following chapters - 5, 6 and 7 – provide a comprehensive description of all three phases.

Chapter 5 presents the contents of the preunderstanding phase. The chapter starts by introducing the results of a preliminary study and two market surveys. Furthermore, it discusses the observed needs for a new artefact, answers the first research question and thus forms the basis for the rest of the research.

Chapter 6 sheds some light on the iterative nature of the product development in order to give a full picture of the process as a whole. This thesis only concentrates on the two latest versions (02 and 03) of the construct. Version 03 is thoroughly described in Chapter 7.1. Because version 02 was an essential part of the construction phase and the development process, it is described in *Chapter* 6. The criteria for both the usability and the usefulness of the construct are also introduced in this chapter. Later, Chapters 7 and *8* discuss, whether the construct was able to meet the criteria in practice.

Chapter 7 starts by describing the structure and the contents of construct version 03 in detail. The purpose is to offer a comprehensive picture of the construct that was developed in the course of the study. A detailed description forms a basis for evaluation of the contents and connecting the construct to existing theories. The main contribution in Chapter 7 is the evaluation and testing of the construct. The evaluation of the construct and thus also reporting was twofold. First, it is ensured that the construct still has a connection to the existing theories. This is followed by discussing the use, usability and usefulness of the construct through extensive evaluation by both experts and users of the construct. Cross case analysis and interpretation of the data is also included in this chapter. Within case descriptions are offered in Appendix 10. Thus, Chapter 7 forms an important basis for the verification and validation of the research.

Chapter 8 sums up the findings of the research and answers the research questions.

Chapter 9 includes the discussion of both epistemic and practical contribution of the research outcome, evaluation of the research as a whole and some issues for further research on the field.

2 LITERATURE REVIEW

Chapter 2 captures and reports relevant theory related to the research issue. The purpose is (1) to further elaborate the relevance of the research issue, (2) to offer basis for defining relevant research questions, and (3) to summarise the existing theories on the research issue for later evaluation of the research outcome and for designing the contents and the structure of the construct.

Chapter 2 offers a brief summary on organisational change and project management by first introducing some theories of organisational change pertinent to the thesis. Light is shed on issues such as planned change and phase models of change as particular ways of changing organisation. A discussion and summary of critical success factors representing different views of changing organisations follow that. Project management issues conclude the chapter; that is, project management body of knowledge (PMBOK) along with some other prominent areas of project management are discussed and summarised.

2.1 Theories of organisational change

For becoming familiar with the research issue, it is relevant to have a look at the present knowledge of changing organisations. The latter forms one basis for both justification and evaluation of the research. Theories presented in this chapter are later reflected against the contents and the structures of the designed construct.

2.1.1 Why and how organisations change

"Change means the new state of things is different from the old state of things." (French and Bell 1999, 2) Organisational change[4] thus means the new state of things in the organisation is different from the old state of things in the organisation.

According to French and Bell (1999, 2; see also Goodstein and Burke 1997, 159; Kanter et al. 1992, 24) the need for change may originate from several different sources, both from inside and outside the organisation. External forces include e.g., regulators, competitors, customers, and technology whereas internal pressure may come from obsolete services and products, new market opportunities, new strategic directions, and an increasingly diverse workforce. Further, Lippitt et al. defined already in 1958 that the decision to strive for change may either be made by the organisation itself, after experiencing pain or discovering the opportunity for a better future or by an outside change agent that takes the first initiative towards a change effort.

Organisations change primarily because of external pressure rather than internal desire to change (Goodstein and Burke 1997, 159). Kleiner and Corrigan (1989, 25, see also Lanning et al. 1999, 32; Miles et al. 1995, 142; Scherr 1989, 407) address similarly that all organisational change is triggered with the perception or experience of either environmental threat, loss or opportunity. To summarise, change is needed when current performance and the way of operation of a business is no longer on a par with the requirements from inside the company or with the environment and the competitive situation.

[4] In this thesis phrase "organisational change" covers all kinds of change efforts in all kinds of organisation. The term is thus not placed specifically under any school of thought in the field of changing or developing organisations. In some occasions, also word "change project" is used referring to all kinds of changes in organisations carried out as projects.

When entering the world of developing organisations, two different types of concepts are usually distinguished, namely organisational and operational change[5]. However, in practice they are strongly interwoven and very difficult to separate from each other, as changes in one part of a system always have implications to some other parts of it. (Salminen 2000, 11; Sharrat and McMurdo 1991, 43) Consequently, every change effort encompasses both organisational and operational characters and elements.

Goodstein and Burke (1997) also discuss the separation of different kinds of changes by claiming that organisations can change on three different levels. That is, changing (1) the individuals, i.e., their skills, values, attitudes and behaviour (2) structures and systems, that is reward systems, reporting relationships and work design and (3) climate or interpersonal style. According to Turner (1999, 53), change introduced by a project may either be technical, i.e., change to the technology or physical environment, or cultural, i.e., changes to the skills, attitudes, values, processes and systems or the structure of the organisation. Turner further notes that the vast majority of change projects result in a mixture of objectives and names these endeavours PSO-projects (People, Systems and Organisation).

Salminen (2000, 49) points out that it is mainly the boundaries between academic disciplines and different research traditions which have caused this somewhat artificial separation of different kinds of changes. "Social scientists have studied changes in human organisations from a people perspective, and operational changes have by and large been considered from the viewpoint of industrial engineering or operations research." (Salminen 2000, 49) Fortunately, there is an acknowledged need for enhanced collaboration between different disciplines, yet there also is a clear dearth of true multidisciplinary exercises (Salminen 2000, 49; see also Järvenpää and Eloranta 2000; Kast and Rosenzweig 1985, 102)

In addition to the scope or subject matter of the change, the radicalness or thoroughness of change may also separate different change efforts. Often fundamental, large-scale changes in an organisation's culture and strategy are separated from incremental changes, evolutionary changes, fine-tuning, fixing problems, making adjustments and modifying processes; that is, implementing modest changes that improve an organisation's performance yet do not fundamentally change the organisation. Fundamental changes are also referred to as revolutionary or radical change, transformation, turnaround, refocus or reorientation (Goodstein and Burke 1997, 160; Barker 1998, 549; Buhanist 2000, 95; Mintzberg and Westley 1992, 40; Stace and Dunphy 1994; Tushman and Romanelli 1985).

Change may also be deliberate, i.e., planned or accidental, in other words unplanned. It can be fast or slow, it may affect many elements of the organisation or only a few. (French and Bell 1999, 2; Cummings and Worley 1993, 52)

Mintzberg and Westley (1992, 40) constructively suggest that change can take place from the broadest, most conceptual level, e.g., in culture to the narrowest and most concrete (e.g., piece of equipment). However, change can also happen in two basic spheres: pertaining to organisation or to strategy. (Table 1)

[5] Organisational change refers to changes in organisational structures, power relations, roles and other issues strongly related to people. Operational change means changes in processes, such as manufacturing processes, supply chain or logistics processes. (See also Salminen 2000, 11)

Table 1 Contents of organised change (Mintzberg and Westley 1992, 40)

	Change in organisation (state)	Change in strategy (direction)
More conceptual (thought)	Culture	Vision
	Structure	Position
More concrete (action)	Systems	Programs
	People	Facilities

However, all these descriptions and classifications of change tend to be stereotyped simplifications. The reality is not so black and white as Stoddard and Järvenpää (1995) suggest in their studies (see also Mintzberg and Westley 1992, 57). In real life, there is an infinite array of change efforts, each unique both in purpose and contents. Katzenbach (1995, 7) puts it clearly when noting that "real change leaders do not care if the change effort is fast or slow, empowered or controlled, one-time or recurring, cultural or engineered – or all of the above. They only care that it is people intensive, and performance oriented."

In this thesis, different kinds of changes, such as organisational and operational changes in organisational entities are not considered separate approaches from the change process point of view. Instead, they are merely regarded as organisational change efforts or projects with some differences in objectives and scope definition. However, as some differences in change efforts do exist, the following few sub-chapters will discuss the most acknowledged and widely discussed types and issues of organisational change, namely organisation development (OD), planned change, phase models of change, and critical success factors of change.

2.1.2 Organisation development, planned change and phase models

Organisational change is often handled under the term "organisation development" (OD). The field of OD originates from and is based on behavioural science disciplines such as psychology, social psychology, sociology, anthropology, system theory, organisation theory, and management. (French and Bell 1999, 1; Burke 1994, 34)

OD grew out of Taylor's (1911) "scientific management" principles and Weber's (1947, e.g., 39; see also Kast and Rosenzweig 1985, 59-71) "bureaucracy" concept, which both focused on breaking jobs into small, repetitive tasks and creating a strong hierarchy of authority in order to build a well functioning efficient human machine. Eventually, however, some scientists, Kurt Lewin (e.g., 1946) in particular, began to realise the shortcomings of the above described mechanistic approach. Consequently, an opposite school of thought, namely organisation development, started to conquer the field of organisational research.

Cummings and Worley have defined organisation development as "a system-wide application of behavioural science knowledge to the planned development and reinforcement of organisational strategies, structures, and processes for improving an organisation's effectiveness". (Cummings and Worley 1993, 2) OD has also been defined as "a planned process of change in an organisation's culture through the utilisation of behavioural science technologies, research and theory." (Bourke 1987, 11). Therefore, although OD involves the element of planning, it also clearly concentrates on the use of behavioural and sociological methods, and even the planning aspect usually deals with the planning of behavioural interventions. There are also numerous other definitions of OD, all having a flavour of their own, yet also including the most prominent views and principles commonly associated with OD.

In OD discipline the culture of the organisation is often seen as an input of the change process, i.e., in order to bring about permanent change the culture must first be altered. (French and Bell 1999, 4) However, there are also contradicting arguments to this. For instance, Kotter (1996, 155) argues that instead of being input, altered culture is an output of a change effort. Culture will thus gradually develop itself alongside with some more tangible changes in procedures, structures and operations.

Out of all the above-mentioned features of organisation development, one of the most acknowledged theories and practices in the field of OD is that of planned change. Cummings and Worley (1993, 52) even argue that all approaches of OD rely on planned change. Miles et al. (1995, 140) also support that notion by stating that the firms planning for the redesigning of the organisation should first consider the basic route their redesign should follow. According to Lippitt et al. (1958, 10) "planned change originates in a decision to make a deliberate effort to improve the system". Consequently, the notion of planned change has lead to different kinds of models for carrying out the planning itself and the action following it. What these models have in common is that they all contain a sequence of phases (also referred as steps or stages) to be carried out. These are accordingly called "phase models" for change.

In phase models the word "phase" is used deliberately to emphasise, that different phases may and do overlap. The word "step", in turn, connotes discrete action; that is, step 1 is completed before step 2 can be taken. (Burke 1994, 59)

Among the first ones published and also the most renowned and referred model of planned change is Kurt Lewin's three-stage process: (1) unfreezing the old, (2) moving to new, and (3) refreezing the new behaviour or situation (in Schein 1987, 93). Schein (1987, 93) improved Lewin's model even further by adding and describing the psychological mechanism distinctive for each phase of the model. Goodstein and Burke (1997) are also in favour of Lewin's three-phase change model of change, unfreeze, and refreeze. They have added more detailed phases and action in to Lewin's model:

Unfreeze

- Top management changes
- Reduction of the levels of hierarchy
- Redefinition of the business
- Top management commitment and involvement

Move

- Empowering and participation of employees
- Supporting the change by support groups
- New incentives and bonuses
- Intensive training according to the business strategy and values
- Management tools to support the change

Refreeze

- Continuous monitoring and feedback
- Promoting the new values
- New performance appraisal system
- Use of task forces

Lewin's model has been criticised for being too simplistic and thus, not offering practical enough information for carrying out change in practice (e.g., Kanter et al. 1992, 372). In the 1980s and 1990s, some more practical "roadmaps" for carrying out change thus emerged, one of the most popular being Kotter's phase model originally introduced in Harvard Business Review and later also published as a book (Kotter 1995 and 1996).

Kotter studied over hundred organisations having carried out a planned change effort and came up with eight most common mistakes causing programs to fail. Fortunately, he also introduced methods for avoiding those mistakes and fatal errors by constructing an eight-stage change process for implementing organisational transformation. He justifies the step model by first claiming that all useful changes tend to be associated with a multistep process that creates enough power and motivation for overwhelming the sources of inertia. (Kotter 1995 and 1996) Kotter's phase model is as follows (Kotter 1996, 21):

1. Establishing a sense of urgency
2. Creating the guiding coalition
3. Developing a vision and strategy
4. Communicating the change vision
5. Empowering employees for broad-based action
6. Generating short term wins
7. Consolidating gains and producing more change
8. Anchoring new approaches in the culture

Kotter states that it is imperative to pay attention to all of the phases, not only to those e.g., most easy to carry out. However, depending on the nature of the change and the current state of the organisation, i.e., employees' readiness for the change, less emphasis may be put on the first four typical errors. He also suggests that all successful change efforts go through all eight stages in his process. (Kotter 1996, 15-16; 23-24)

There are also numerous other phase-models for carrying out change in organisations. In Table 2 some of them are summarised and organised according to Bullock and Batten's (1985, 400) clear exploration-planning-action-integration phase-model. Models representing different decades, movements, disciplines and schools of thought were selected to form as comprehensive and representative picture of the issue as possible.

Table 2 Summary of different phase models representing a variety or decades and schools of thought classified under Bullock and Batten (1985) model (Modified from Salminen 2000, 57 and 59)

Bullock and Batten 1985	Lewin 1951	Lippitt et al. 1958	Frohman et al. 1976	Ackerman 1982	Burke 1982	Beer et al. 1990a	McCalman and Paton 1992	Burke 1994	Walton 1995	Kotter 1995
Exploration	• Unfreezing	• Developing need • Establish-ing change relationship • Diagnosing problems	• Scouting • Entry	• Awareness of the need and opportunities for change • Assessing the environment and organisation	• Entry • Contracting	• Mobilising energy	• Problem / system specification • Formulation of success criteria • Identification of performance indicators	• Generating need	• Diagnosis	• Establishing a sense of urgency • Forming a powerful guiding coalition
Planning		• Examining alternative routes and goals • Establish-ing intentions of action	• Data collection • Data Feedback • Diagnosis • Planning	• Designing the future state • Defining what needs to be changed • Planning and organising for Implementation	• Diagnosis • Feedback • Planning	• Developing a task-aligned vision • Fostering consensus, competence and cohesion	• Generation of options and solutions • Selection of evaluation techniques and option editing • Option evaluation	• Determining future state • Addressing organisational power and political dynamics	• Clarifying and Coalition Building	• Creating a vision • Communicating the vision
Action	• Moving	• Actual change efforts	• Action • Evaluation	• Implementing new state • Evaluation and fine-tuning	• Intervention • Evaluation	• Spreading revitalisation	• Development of Implementation strategies	• Disengaging from past • Organising transition teams • Involving people • Using multiple levers • Providing feedback • Creating symbols and language	• Action • Consolida-tion and Refinement	• Empowering others to act on the vision • Planning for and creating short-term wins • Consolidating improvements and producing still more change
Integration	• Refreezing	• Stabilising change • Terminating relationship		• Formalising the new state		• Consolidating changes • Continually monitoring and strategizing	• Consolidation	• Utilising reward system • Deploying guardians of the new way	• Sustaining	• Institutionalising new approaches

However, even change models have not survived without criticism. For instance, Kanter et al. (1992, 372; see also Buhanist 2000, 5; Cummings and Worley 1993, 67) argue that phase-models used both by practitioners and academics may be just a little too simple**.** Cummings and Worley further address that another deficiency in planned change and phase-models is that the picture they portray about change effort is misleading. They also note that in practice, even planned change is chaotic by nature, involving shifting goals, surprising events, and unexpected turnarounds. Furthermore, change and phase models have been typically characterised as a sequence of phases or activities needed to be carried out in a successful organisational change. Merely outlining some general steps, however, is not adequate and does not meet the challenge, namely offering information as to how different steps should be taken in different situations, surroundings and environments. (Cummings and Worley 1993, 67)

The criticism on phase-models is mainly focused on their oversimplifying nature and the lack of causality and clear contingency frameworks. In other words, in a specific situation, which actions are the most important ones and how they could be completed in the most efficient manner? However, it is also fruitful to ask if such contingency theories would be at all practical in their enormous complexity and would it be possible to construct them in the first place.

Kotter (1996, 23) also reminds that although different phases are described in a quite straightforward and simple way, they often overlap and thus the entire change effort increasingly resembles an evolving process rather than clearly phased progression. He further notes that it is not meaningful to draw a clear line between the phases separating the end of one step from the beginning of the next. Although Kotter states that it is important to *initiate* action in the specific order described in his eight-stage model, many different stages may be under way at the same time. The vision can still be communicated although short-term wins are already produced. Still, he seriously points out, that both forgoing even a single step or failing to build a solid base for moving up in the process almost always creates problems. (Kotter 1996, 23-24)

One way to look at change is to start searching pertinent ingredients for a successful change effort. In contemporary literature this is one of the most common ways to approach the complexity of change. Thus the main challenge is not to put different tasks or phases in sequential order but, rather, to identify those factors most important to take into account if striving for a successful change. At the same time with the rise of critical success factors, phrase “change management” emerged and widely replaced OD, yet these two concepts seem to overlap considerably.

It is also difficult and maybe even pointless to distinguish between phase models and critical success factors. Many times, on one hand, phase models are based on some kind of critical success factors and, on the other hand, models of critical success factors are portrayed in a way that they resemble phase models (e.g., Kotter 1996, 21 or Beer et al. 1990b, 161).

Change management literature has traditionally focused on identifying sources of opposition to change and offering means and methods to overcome them (Cummings and Worley 1993, 144). Although change management seems to put more emphasis on strategic issues, on competitive advantage, and on customer focus, OD and change management comprise similar characters, objectives and means in terms of changing organisations.

Carnall (1990, 121) summarises the management of change by stressing that continuous learning about the business or organisation is an essential part of implementing change. Introducing and implementing change in ways, which do not encourage learning, will probably lead to frustration and negative attitudes towards change efforts and eventually to

insurmountable problems of bringing about the development pertinent to the organisation. Thus, only by learning can improved effectiveness be achieved and sustained. Carnall's views on how to manage organisational changes are portrayed in Figure 4.

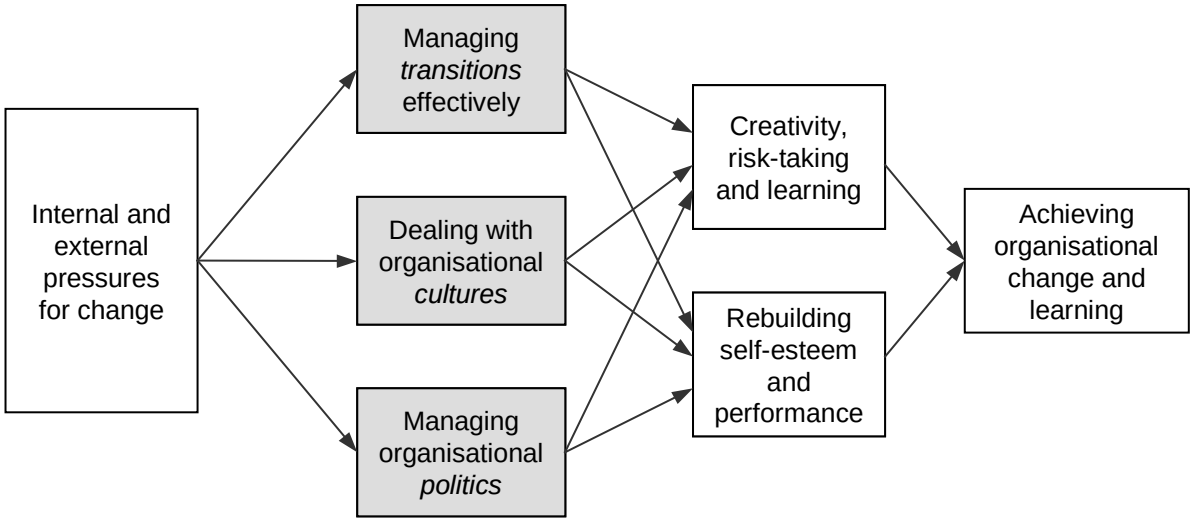

Figure 4 Managing major changes (Carnall 1990, 121)

Carnall (1990, 178) further suggests five actions for leaders in change: set values, support problem solving and risk, design systems to support action, focus on the manageable, and develop skills in people.

Cummings and Worley (1993, 144), in turn, claim that all essential practical advice for managing change can be organised into five major categories as illustrated in Figure 5. They even suggest that activities in the figure are listed roughly in the order in which they are typically executed. This seems to be a common approach to success factor models in general, and supports the notion that although a certain order of success factors is not an objective in itself, authors usually try to portray them in a chronological order.

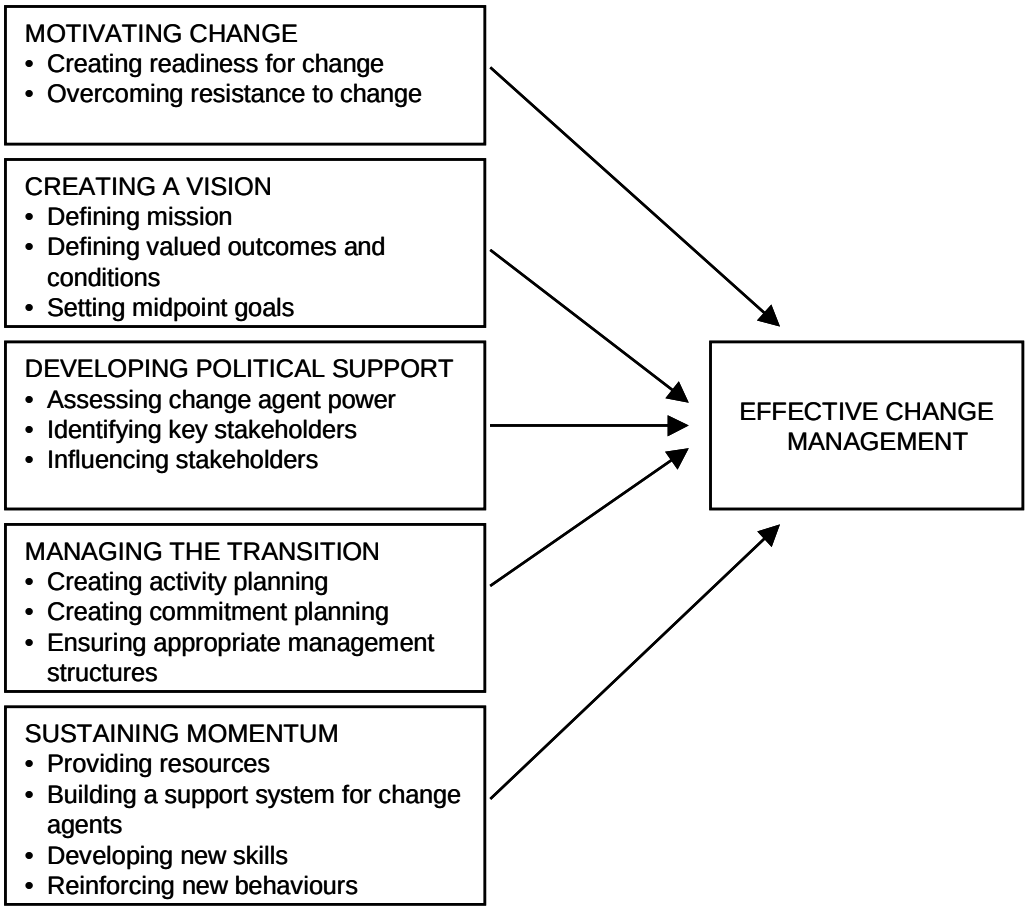

Figure 5 Activities contributing to effective change management (Adapted from Cummings and Worley 1993, 145)

Cummings and Worley's model contains planning, the steps towards new, attractive vision and objectives. It also pays attention to motivating people and identifying key players of the change. Nor does it forget to ensure sufficient top management support, to provide adequate resources for change and to build up reinforcing organisational structures.

Similar kinds of models and frameworks are abundant in the literature (e.g., Beer et al. 1990a, 160; Tulloch 1993, 62). Someone places more emphasis e.g., on human issues whereas someone else may stress visions and strategies (e.g., Kotter 1996). In conclusion, it is very difficult to pick up and name the most salient differences between the models, particularly in terms of their usefulness and usability in a real life context.

2.2 Project management in organisational change

Project management evolved in the late 1950s to answer the need of an efficient management philosophy for large military systems. Most of the early project management concepts were thus developed by North American military organisations working with defence contractors. However, according to Cleland (1994, 4) no one can really claim to have invented project management. Its roots can be found in the construction industry and in the engineering discipline, yet later, the idea of carrying out things by projects was adopted also in other disciplines.

As a management discipline, project management has its roots in the branch of management science or operational research (OR). In turn, the basis of OR lays on belief that there are different forms of management problems, i.e., decision or inventory problems, and all differences from the general form are only minor in nature. According to Partington, this is also the underlying philosophy of project management methodologies. (Partington 1996, 17)

A project is often defined as a unique endeavour with predefined start and end dates, objectives, scope, and budget, performed by a temporary organisation (e.g., Cleland 1994, 5; Kerzner 1989; Lewis 1993, 14; PMBOK Guide 1996, 6). The Project Management Institute (PMI) defines project management *as "the art of directing and co-ordinating human and material resources through the life of a project by using modern management techniques to achieve predetermined objectives of scope, cost, time, quality and participant satisfaction"* (Cleland 1994, 5). The definition thus clearly emphasises on one hand different techniques and on the other hand the objective of reaching predefined goals on time and within the budget.

PMBOK makes a distinction between projects and operations – though admitting that these two can overlap – on the basis of continuity and uniqueness. According to this definition a project is "a temporary endeavour undertaken to create a unique product or service" (PMBOK 1996, 4). "Temporary" means here that each project has a definite end, which is reached when the objectives of the project are reached. Uniqueness of the results means that no other product or service of exactly the same nature has been produced before.

On the basis of the definitions described above, it becomes quite clear that a change effort in an organisation is – or at least could be – a project. It usually has predefined starting and ending dates, objectives and schedules. Furthermore, a temporary project organisation is responsible for carrying out the undertaking within defined scope and budget.

Although the history of project management is connected with the management of large-scale product development or capital investment projects, recently some authors have explicitly acknowledged tendency towards managing organisational transformation efforts as projects. **(**Partington 1996, 13; Adler and Shenbar 1990, 26; Carnall 1990, 199; Juran 1992, 320**;** Kotter 1996, 125; Turner 1999, 2) Juran (1992, 320) especially emphasises that quality improvement efforts should be organised as projects. Thus, change is being managed with an increasing professionalism, yet remembering that pragmatism should be the greatest preoccupation for leaders and managers in change (Carnall 1990, 199).

Cleland (1994, 22 and 35) summarises that in addition to more or less traditional project management areas, projects can be used e.g., for developing new processes or reorganising corporations. He further refers to organisational change and determines that a project is something that brings about change in an organisation and has:

- Time, cost and technical performance parameters (or objectives)
- Complexity, scope or innovation beyond the operational work of the enterprise
- A key role in preparing the organisation for its future
- Significant contributions by two or more functional units of the organisation
- A direct contribution to the success or failure of the enterprise

Turner (1999, 3) also includes change in his latest definition of a project: "A project is an endeavour in which human, financial and material resources are organised in a novel way to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives".

Regarding Cleland's definition, change efforts can surely be carried out as projects and thus also called projects if only organised in a manner described in Cleland's definition. In general, Cleland adds, project management can be used for any ad hoc endeavour and, furthermore, the more unfamiliar and unique the undertaking is, the greater the need for project management (Cleland 1994, 57). A change effort is usually unique and unfamiliar since changing organisations is not a part of a company's main business or core competence.

On the other hand, project management is not needed in highly standardised and stable environment where things are run by routines. Nor is it necessary if the organisation or the task is very small and it can be accomplished through the functional organisation by more "informal" techniques than those used in project management. (Cleland 1994, 72)

Turner (1999, 2) notes that change is endemic and has become an essential determinant in maintaining a company's competitive edge. The old bureaucratic style of management is incapable of meeting the challenges of a changing environment. According to Turner, project management is the answer to many of the distinguishing challenges of the prevailing markets.

Knowing this, it is surprising how poorly managed change projects often are. Partington (1996, 13 and 15) remarks that in many cases, inappropriate systems are used for managing change projects. That is, although the objective of many organisations as a whole is to abandon bureaucracy, they may turn to the most bureaucratic tools and methods to manage projects of organisational change.

2.2.1 Classical project management theories

Compared with change management, the approaches, models and views in project management are much more similar and unanimous among different practitioners. Project management literature is traditionally built around a life-cycle model of a project and tools, methods and techniques needed to carry out the project management task are in context with this life-cycle. Another distinguishing element in project management is the project management body of knowledge (PMBOK), which includes the necessary capabilities, that is, the skills, knowledge and methods required of a project manager.

The phase of the life-cycle determines which activities and what work should be carried out, and to a certain degree also who should be involved (PMBOK 1996, 12). The activities of each phase are described in detail in many sources, and numerous tools and methods are provided by the literature. Project life-cycles presented by different authors vary in terms of definitions and words, yet under closer scrutiny, it becomes clear that they also have much in common. They all describe a completion of a project through different consecutive phases which, however, may overlap. Salminen (2000, 81) has summarised some project life-cycle models and organised them according to the most general, four-phase model, way of describing different phases of the project (Table 3).

Table 3 Project life-cycle models (Adapted from Salminen 2000, 81)

Morris 1982	Adams and Barndt 1983	Roman 1986	Burke 1995	Maylor 1996	Turner 1999	Kerzner 1998
Feasibility •Project formulation •Feasibility studies •Strategy design & appraisal	Conceptual •Identify need •Establish goals •Estimate available resources •Sell the project •Make key personnel appointments	Conceptual •Objectives •Activity forecasting •Review of objectives	Conceptual		Germination •Develop proposals •Gather information •Conduct feasibility •Estimate design	Conceptual
Planning & Design •Base design •Cost & Schedule •Contract terms & conditions •Detailed Planning	Planning •Define organisation •Define targets •Schedule •Define & allocate tasks & resources •Build project team	Formative •Policy decisions •Planning		Planning •Conceptualisation •Analysis •Proposal •Justification •Agreement	Growth •Develop design •Estimate costs and returns •Assess viability •Obtain funding	Planning Definition and design
Production •Manufacturing •Delivery •Civil Works •Installation •Testing	Execution •Perform the work	Operational •Implementation •Control	Execution	Doing •Start-up •Execution •Completion •Hand-over	Maturity •Do detail design •Baseline estimates •Do work •Control progress	Implementation
Turnover & start-up •Final testing •Maintenance	Termination •Transfer of product •Release the resources •Transfer of commitments •Terminate project •Reward personnel	Termination •Evaluation	Operation	Checking •Review Acting •Feedback	Metamorphosis •Finish work •Commission facility •Obtain benefit •Disband team •Review achievement	Conversion

Salminen (2000, 82) concludes that apart from similarities and minor differences in terminology and tasks included in different phases, there are also some fundamental dissimilarities in the models. Maylor, for example, integrates the feasibility and planning phase and divides the last phase into two. His model thus resembles plan-do-check-act cycle familiar in the discipline of quality management (Ishikawa 1985, 59). Salminen places some criticism on Maylor's model since the initial preparation and project planning are usually clearly separated by the actual decision to start the project. Furthermore, he questions the need to divide the last phase into two separate phases. (Salminen 2000, 82)

As earlier mentioned, different models do have a lot in common, too. In general, the project idea and the project itself starts to take form and materialise in the feasibility or conceptual phase. Different project alternatives are compared and discussed, preliminary objectives are stated, and tentative resource estimation is carried out. If a project is to be launched, the planning phase is entered. This phase encompasses all elements pertinent to project planning and the outcome is a written blueprint of what should be done, by which resources, by when and which methods. The implementation phase contains the actual realisation of plans. However, increasingly common in change projects is that planning and implementation is an incremental process and phases thus overlap significantly. The last phase, turnover or termination, takes the project into conclusion by handing over the outcome of the project to the customer. Project organisation is disbanded, project is evaluated and project personnel rewarded.

Project management approaches and models have been criticised by over rating project management tools and techniques by seeing them as ends instead of considering them tools for achieving project's goals (e.g., Carnall 1990, 159; Tampoe and Thurloway 1993, 245 and 248). In change efforts, people need empathy, information, ideas, milestones and feedback, but unfortunately often they only get authoritarian management, avoidance of key issues, no clear milestones and no feedback. (Carnall 1990, 159)

Tampoe and Thurloway (1993, 245) emphasise the importance of teamwork and motivation for a successful conclusion of a project and further state that the key contributors to the project success in goal-directed projects are group rewards, credibility of the project, team knowledge and competence, role and goal clarity, supportive project environment, resources in particular and project leadership.

2.2.2 Change projects as a special field of project management

Turner and Cochrane (1993, 95) classify projects according to two dimensions, that is, how well defined are the goals of the project and how well defined are the methods for achieving those goals. This classification thus forms a two-by-two matrix introduced in Figure 6. According to Turner and Cochrane, change projects typically fall into the category of the type 4 projects in which both goals and methods of achieving them are poorly defined.

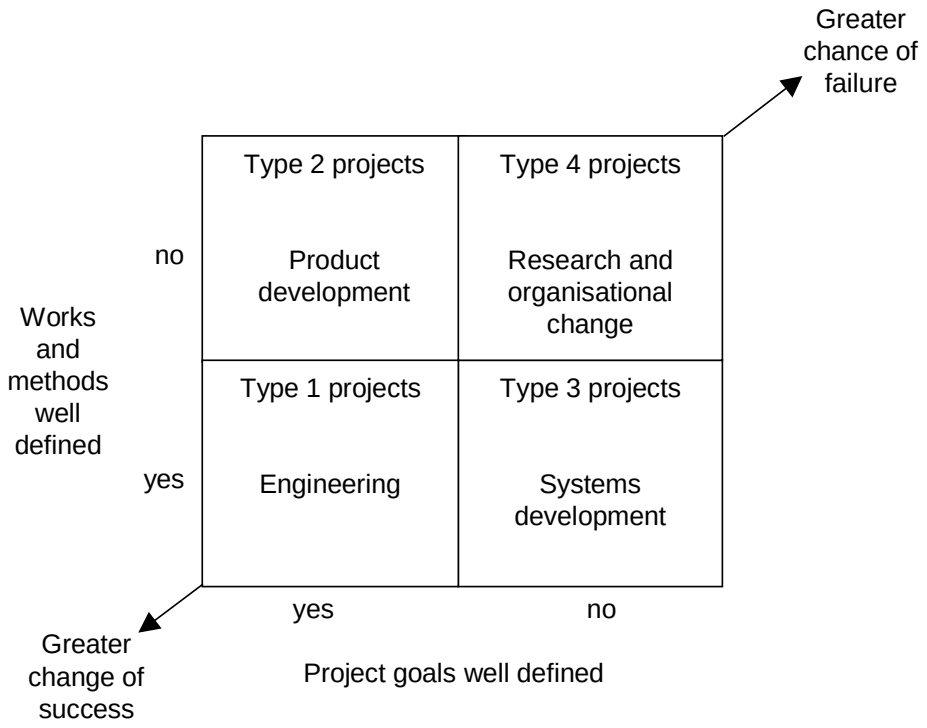

Figure 6 Goal and methods matrix (Adapted from Turner and Cochrane 1993, 95)

According to Mikkelsen et al. (1991, 77) internal change projects, such as organisational development projects, form a special category of projects having distinguishing characteristics and thus also requiring somewhat different emphasis of project management compared to more traditional projects typical in the fields of engineering facilities and construction. Thus also the critical success factors of change projects and the skills required from a change project manager are somewhat different from traditional external projects.

According to a study of internal development projects – i.e., product development, software development and organisational development – and project manager's role, the three major differences between internal and external projects are: (Mikkelsen et al. 1991, 78; see also McElroy 1996, 327)

- Weak initial foundation of internal projects. Internal projects are not based on a clear contract and there are conflicting ideas and ambitions about the project inside the organisation.
- Organisational development contents. Development of organisation and personnel and learning are among the most important tasks in internal projects.
- More competition of resources with day-to-day operations in internal projects.

While traditional methodology concentrates on the project life-cycle and the hard dimensions of project management, such as budgeting and scheduling, change project management needs to emphasise the human, organisational and political aspects of the change as well (Boddy and Buchanan, 1992; see also Turner and Cochrane 1993, 97)

The obvious need and, consequently, the growing adoption of project-based principals to changing organisations together with the distinctive and unique nature of change efforts call for new models and applications of project management (Partington 1996, 15). Partington further states that, between 1994-1996, most of the project management articles in both

International Journal of Project Management (IJPM) and Project Management Journal (PMJ) were strongly biased towards tools and techniques for either planning the project or making decisions in the course of implementation. However, the problems and failures in organisational change are many times connected with human factors rather than technical problems. Constructs are thus needed for dealing with human side of project management and control (e.g., Boddy and Buchanan 1992; Kaufman 1992; Kotter 1996).

2.2.3 Project assessment

Because the objective of the construct developed in the course of the research is to help and facilitate change project managers successfully plan and implement change projects, it is important to define what project success means. Salminen (2000, 15) addresses the fallacy of classifying change projects either as successful or unsuccessful. "All change projects can be placed somewhere in the continuum between extremely successful and total failure, and the task is to assess the degree of success" (Salminen 2000, 15). Consequently, Salminen proposes that the success of a change effort should be defined as the degree to which it fulfils the following criteria:

- Meets the goals set for it
- Is implemented on schedule and within budget
- Generates positive operational and economic results
- Is perceived as successful by most internal and external stakeholders

This definition is also used later in case studies.

2.3 Potential success factors in change projects

Organisational and operational change projects call for a combination of knowledge and skills derived from both project management and change management. Neither the existing change management practices nor the project management body of knowledge form a sufficient presentation of skills required from a qualified change project manager. Change projects should be managed as projects with thorough planning and strict co-ordination, but bearing in mind that organisational change always deals with changing the way people behave and thus unavoidably also with organisational learning.

Some of the abundant literature of critical success factors of change is summarised in Table 4[6]. They also contain factors, which practitioners of project management discipline consider most critical in carrying out all kinds of projects.

[6] Table 4 is a result of a comprehensive literature review representing various views on critical success factors in change and project management. Different columns, i.e. potential success factors emerged from the literature and were thus not predefined. By each author, critical success factors represent those issues that the author considers most important for a successful change. They are usually identified and picked up from a change/phase model together with other parts of that particular piece of literature.

Table 4 Summary of different author's views on critical success factors in carrying out change in organisations

	Purposeful participation	Management support	Effective communication	Control and feedback	Supporting environment	Vision and clear goals	Purposeful planning	Clear need for change	Training	Key persons and organisation	Motivating people	Paying attention to culture	Risk management and dealing with resistance	Co-operation	Connection to strategy	Leadership
Lippitt et al. 1958	√	√		√	√	√	√	√	√		√		√			
Ackerman 1982	√	√	√	√	√	√	√	√		√			√			
Kleiner and Corrigan 1989	√		√	√		√	√					√				
Carnall 1990		√		√	√		√	√	√					√	√	
Mikkelsen et al. 1991		√	√						√							
Kaufman 1992	√	√	√		√	√	√								√	
Cummings and Worley 1993		√			√	√	√		√	√	√		√			
Burke 1994	√	√	√	√	√	√		√		√	√	√				
Eichelberger 1994	√		√		√	√	√	√						√	√	
Kotter 1996	√	√	√	√		√		√		√		√	√			√
Denton 1996	√	√	√	√		√			√	√	√					
Goodstein and Burke 1997	√	√		√	√		√		√					√		
Rafii and Carr 1997	√		√		√			√								
Moosbrucker and Loftin 1998	√	√	√													
Teng et al. 1998	√			√	√				√			√				
Salminen 2000	√	√	√	√		√	√	√	√		√					√
Σ	13	12	11	10	10	10	9	8	8	5	5	4	4	3	3	2

The issues in the heading row in Table 4 are referred as "potential success factors" in change projects. Potential success factors are later in Chapter 7.2 used for linking the developed construct with existing theories. However, they also played a role in defining the contents and the structure of the construct. For this reason, all potential success factors are described below.

2.3.1 Abundant and purposeful participation

As the business environment is changing, helping more people become more powerful is a necessity. (Kotter 1996, 101 and 108; Denton 1996, 6) In this thesis, participatory approach means planning and implementing change in a way that enables and encourages those affected by the change to take an active role in the planning and implementation of the changes. (see also Kleiner and Corrigan 1989, 29; Moosbrucker and Loftin 1998, 299) It is thus not only employees and project personnel's but also management's concern to have an active role in a change project. However, managers should also be aware of the essence of giving people a chance to move slowly ahead, discover deficiencies of the organisation by

themselves, and finally to seek out and to develop solutions for a better future (Carnall 1990, 109; see also Pasmore 1994, 6).

Openness and participation increases the understanding of current problems on all levels of organisation and eventually leads to finding out totally new and more effective ways of doing things (Carnall 1990, 108; Leppänen et al. 1991, 8; see also Lanning et al. 1999, 172). Basically, the purpose of participation is to utilise the expertise collected in the organisation to facilitate the implementation of the new system and to get the people committed to the new ways of operation. However, its main purpose should always be to achieve the project's goals as quickly and cost-effectively as possible. Furthermore, participation is not an instant key to success. In order to be successful, participative development requires lots of work. (Lanning et al. 1999, 177; Sharrat and McMurdo 1991, 46)

Lewin (1952, 227) refers to "group standards" when looking for reasons for resistance to change. He concludes that the more individuals value group standards of their environment, the greater will the resistance to change of an individual group member be. Lewin further continues that group standards with social values are often referred to as "social habits". The mean for reducing the level of resistance may thus be either to diminish the strength of the value of the group standard or to change social habits itself. (Lewin 1952, 227)

According to Lewin (1952, 227), the power of changing social habits is one of the reasons for the effectiveness of group carried changes. By that, Lewin also implies to the power of participation, as it often means that decisions are made and changes are carried out by a group of people. One could assume that single individuals would be more amenable to changes than groups of like-minded individuals. However, Lewin (1952, 227) argues that all field experiences indicate that it is easier to change individuals that are formed into a group than to change any one of them separately. That is, since group standards are one of the causes to change resistance, one first has to change the group standard, which, in turn, is easier to accomplish in a group of people.

Participatory approach, in particular, calls for clear leadership and vision from the manager, as people need to know what is expected of them. "Leadership means knowing when to delegate downwards and across functions, and when not to." Another prerequisite for successful participation is that, the need for change, the objectives of the project, and the potential benefits of success are fully understood. (Turner 1999, 57)

The degree of participation should be tailored for each individual case. However, to gain commitment to solutions and to give people time to adapt to new systems it is advisable to have employees involved as early as possible, preferably already in the planning phase. (Lanning et al. 1998) Kaufman (1992, 87) also points out that if participatory approach is adopted, it should be properly carried out. If employees are asked improvement ideas and recommendations, managers should be prepared to truly empower and involve workers even in matters of great importance. Otherwise, only frustration and mistrust will be build.

If so many important advantages can be secured by personnel participation, why aren't all development projects carried out in this way? One obvious reason is the long history of planning by professionals as well as the accustomed, specialised job descriptions: the designer designs, the realiser realises and the user uses. (Lanning et al. 1999, 171) However, there are also many problems and risks to participative development. Carnall (1990) notes that participative approach calls for more time, particularly at the planning phase and, therefore, requires more time and effort in the early stages of change. It is obvious that the broader the participation on a project is, the more ponderous the project becomes. Every development group and design meeting takes time, requires co-ordination from the project manager and ties the work-time of the participants.

2.3.2 Management support

A project manager needs to have support and commitment from top management. Top management support means that top management has recognised its own role in the transformation effort and is willing both to change itself and organisational structures and procedures. (Carnall 1990, 9; Argyris 1985, 297) It also means lasting and strong commitment, support, and leading by own example (Denton 1996, 6-9). Support at the top level is crucial to success and, consequently, senior managers should be clearly accountable for change. Among different authors, there is a general agreement on that. (e.g., Carnall 1990, 159; Denton 1996, 6-9; Moosbrucker and Loftin 1998, 299; Partington 1996, 18; Turner 1999, 59) Increasingly often organisations adopt a project management approach to reinforce this accountability also in change efforts (Carnall 1990, 159).

According to Cleland (1994, 94), every project should have its owner; that is a person who is able to assign resources for the project and has vested interest on the project due to its strategic importance for his or her part of the organisation. Cleland (1994, 94) puts it even more simply: ”The project owner is the one who provides the money to fund the project”.

Firms do not act in a mature and stable environment, but are constantly struggling with challenges of keeping up with constantly altering requirements of customers and fast developing rivals. In these circumstances, change efforts become increasingly complex, yet they should be completed in less time than ever. For this reason, powerful forces for backing up and sustaining transformation efforts are a necessity. (Kotter 1996, 51-52) Further, changing organisation is a time consuming effort and thus requires long-term planning and dedication at all levels of the organisation. True top management support enhances project manager’s authority and autonomy to design and implement the change. A shared commitment by management to a powerful coalition ensures the appropriate importance and prioritisation of the project. (Turner 1999, 59; see also Lanning et al. 1998)

Kotter (1996, 52-57) comes up with some building blocks of a well working management group; the right composition, high level of trust, and shared objectives. He further suggests that all too often project committees are of low credibility due to a wrong composition. Kotter thus suggests four characteristics essential to a powerful management group:

- Position power: Are enough key players on board?
- Expertise: Are the various points of view relevant to the successful completion of the task at hand adequately represented?
- Credibility: Does the group have enough members with good reputations in the firm?
- Leadership: Does the group include enough skilful leaders to be able to guide the change process?

Carnall suggests that top management support, how ever true and massive it might be, is not sufficient for a successful change. In addition to support for other people, they should seriously consider and discuss the issue as to how they themselves should change as a prominent part of the overall change effort. Carnall also warns that however attempting it is to have control over every pursuit in an organisation, it will probably lead to counterproductive results, as it discourages initiative and active behaviour and takes time and money to exert. (Carnall 1990, 3)

2.3.3 Effective communication

When it comes to communication, Burke’s words (1994, 149) “it is difficult to communicate too much in a major change effort” are very descriptive. Moosbrucker and Loftin (1998, 299;

also Denton 1996, 6; Pinto and Slevin 1987, 25), also call for abundant, open and honest communication, which materialises in management's willingness to answer every question asked about planned changes. Boddy & Buchanan (1992, 165; see also Buhanist 2000, 130) further claim that in a relatively unstructured project, people need to know where they stand and what will happen next more than ever. Otherwise critical actions and phases may be ignored and resources may be allocated for accomplishing secondary actions.

Mikkelsen et al. (1991, 79) argue that one element imperative for the project success is the ability to communicate to employees the kind of changes the project will obviously cause to each persons responsibilities, tasks and working environment. Mikkelsen et al. further claim that personal leadership qualifications play a significant role in accomplishing the demanding task of transferring knowledge.

The more open and thorough communication is undertaken, the more trust is likely to develop between different parties involved in the change (Kaufman 1992, 88). Communication is also an important means for building a common understanding of organisation's goals and direction. One of the objectives of communication is thus to drive home to the personnel what the change project is really about: why is it started, what parts of the organisation are affected and what are its targets and schedules. Again, without communication the real power of setting goals, envisioning, and planning is not unleashed. (Kotter 1996, 85)

The most effective method of communication is to use as many different means to communicate as possible and, foremost, to repeat the message several times in every possible occasion – either official or unofficial. According to Kotter (1996, 87-88, 94), communication fails simply because not enough effort is put in doing it. Another challenge is to make top management and other people preparing the change understand that other people also need a considerable amount of time to digest the planned change and to understand the core meaning of it. All too often, the people assume that the very same vision and plan, for which they have worked for months, would become clear for the rest of the staff in a fraction of that time. (Kotter 1996, 88; see also Marshak, R. J. 1993)

2.3.4 Control and feedback on progress

Monitoring, controlling and the provision of feedback are basic tools in traditional project management (e.g., PMBOK 1996, 39; Kimmons 1990, 111). Control is the essence of managing a project. Checking that work is performed according to the plan, that budget and schedules are met, and that the changes implemented are actually taking the organisation in the desired direction are also the change project managers' most important responsibilities (Lanning et al. 1998).

Regular monitoring enables recognising problems at an early stage and maintains the motivation of the project personnel. Monitoring the progress of the project and exercising control over it on this basis to meet the targets is the most important task of the project control and management staff. (Lanning et al. 1999, 189) Carnall (1990, 69) even argues that monitoring is one of the most effective ways to build up the need for change in the organisation. Therefore, we should continuously monitor our performance, measure the effectiveness, and assess the potential for improvement in our organisation. Kotter (1996, 121-122; see also Carnall 1990, 9; Denton 1996, 6; Kleiner and Corrigan 1989, 29) warns that without serious attention to monitoring, follow up and visible short term wins, you play a very risky game with odds strongly against you.

Merely monitoring and controlling progress is, however, not enough. An important function of project follow up in change projects is to motivate people to strive for the project goals. (Carnall 1990, 69) Active and open communication about progress and schedules is also an important part of monitoring, as most people are enthusiastic to see that the project is running well. If people do not know what has been achieved, they might feel that all their efforts have been in vain (Burke 1994, 153). Positive responses are crucial. Kotter (1996, 125-126) emphasises the role of planning for short terms wins, organising according to that, monitoring the change and measuring the results in an understandable method.

2.3.5 Supporting environment

If organisational structures, systems and procedures along with management's behaviour don't support the new way of doing business, it becomes hard for the project group to bring about the desired change (Carnall 1990, 9-10; Kaufman 1992, 89; Kotter 1996, 110; Rafii and Carr 1997, 44). In this context, structures, systems and procedures represent all aspects of organisation which may either facilitate or impede development. Good examples are metrics and incentive systems, leadership manners, reporting relationships, power structures, tools and technology, and communication channels. Kotter (1996, 110) also calls for rearrangements in promotion decisions and recruiting principles and Rafii and Carr (1997, 41) address the importance of changing the budgeting system. These should all be consistent with the intended direction of change (Kaufman 1992, 89; Kotter 1996, 109-114).

Encouraging incentive and metrics systems are perhaps one of the most commonly discussed issues in terms of supporting environments. (e.g., Kaufman 1992, 88-90; Rafii and Carr 1997, 41) Employees, completely rationally and logically, respond to incentives, however misleading they may be. Unless the metrics and incentive systems are changed, the personnel fare into an ambiguous situation – the project's goals direct people in one direction and the obsolete measurement and payment systems to another. Thus, designing systems congruent with stated goals is imperative, yet also an iterative and time consuming endeavour. (Kaufman 1992, 88-90)

Kaufman (1992, 91) also argues that only an all-encompassing change will lead to significant and consistent results, as reports, compensation policies, and organisational structure all guide and encourage courses of action as significantly as a manager's spoken word. Many traditional systems, based on functional responsibility approach, only hinder achieving lasting cross-functional gains. Furthermore, as an organisation is a system, incremental changes in one part of it do not necessarily result in the improvement of the whole. On the contrary, fixing narrowly one part of the organisation may cause decline in the overall performance of the organisation. (Forrester 1969, 110; Kaufman 1992, 91; Rafii and Carr 1997, 44)

Teng et. al (1998, 96-98) examined the influence of two variables, namely "radicalness" and "effort on different phases" of the project, on the project success. Project success was measured by the perceived level of success and goal fulfilment. A questionnaire was send to 853 different companies and 239 usable responses were received back. One of the key results of the study was that "the likelihood of reengineering success increases with more thorough and substantial change to the key elements of the organisation." In other words, if the change effort is comprehensive, covering all important elements of organisation, the odds for success increase. In addition to structures and information technology, you have to be willing to change roles, responsibilities, measurement and reward systems and values. (Teng et. al 1998, 100)

2.3.6 Vision and clear goals

Vision "provides a picture of the future and shows how individuals and groups will fit into that future" (French and Bell 1999, 122; see also e.g., Carnall 1990, 99; Cleland 1994; Collins and Porras 1996, 73; Kotter 1996, 76; Senge 1990, 206). A vision is thus an anticipation of the future state of an organisation and responds to the question: "What it is to be like?" Senge (1990, 206) framed the same question as "What do we want to create?"

A good vision shows the direction for development**.** By Kotter's (1996, 76-78) definition, a good vision is imaginable, desirable, feasible, focused, flexible, and communicable at the same time. Kotter also introduces the rule of thumb: "If you cannot describe your vision to someone in five minutes and get their interest, you have more work to do in this phase (developing a vision) of a transformation process." Communicability and simplicity are thus the essential criteria of a successful vision.

Goals, in turn, should be realistic and expressed in specific, quantifiable measures. (Argyris 1985, 298; Denton 1996, 6; Kaufman 1992, 85; Turner 1999, 56) Goals give answer to the questions "How efficient?" or "How quickly?". Proper goals are based on facts and on an analysis of the current situation. Further, goals should be in line with the vision and strategy. In other words, the vision will materialise through the goals of the development projects. The connections with the vision will make it easier to justify the goals to people dealing with the project and helps them commit themselves to the objectives (Lanning et al. 1999, 96).

2.3.7 Purposeful planning

A project plan should be considered as a framework for co-ordination, but one must also be willing to change it if new conditions require it. (Turner 1999, 5) A good change project plan consists of vision and goals, the background and reasons for the project, methods to be used, work breakdown structure, resources and responsibilities, organisation, a schedule, a budget and a plan for communication (Lanning et al. 1999, 147).

According to Kaufman (1992, 85), realistic planning is the key for lasting top management support and the credibility of the change effort as a whole. As commitment and support for the implementation efforts are crucial for the success, decisions are not complete until adequate and appropriate resources are allocated for carrying out the decision. (Carnall 1990, 20; Kleiner & Corrigan 1989, 29-30) Assigning resources, mainly people, is thus one of the most important elements in change project planning.

When planning a change project, it should be borne in mind that it is no use planning at a level too detailed to control. Turner (1999, 5) points out two fallacies in meticulous planning. First, if a certain amount of work and effort, x, is required to produce a plan with a given accuracy, then to double the accuracy, it requires four times as much effort, namely 4x and so on. Eventually, further planning leads to decreased return of investment. The second flaw relates to the future, that is, you cannot predict it precisely, and too detailed plans make it only more difficult to respond to unexpected changes. (Turner 1999, 5) To summarise, there must be a plan for a change project but, at the same time, one must be willing to be flexible in terms of meeting new challenges and requirements as they occur.

2.3.8 Clear need for change

The first phase of the change process is establishing the sense of urgency, i.e., making sure that all people involved in the change effort have internalised the need for it. (French and Bell 1999, 122; Kotter 1996, 35; Turner 1999, 57) Lippitt et al. (1958, 131) refer to the same

issue with the notion of "problem awareness" which means that difficulties in the organisation must be translated into a desire to change.

According to Mikkelsen et al. (1991, 79; see also Barker 1998, 554), one of the most crucial factors for success is understanding the subject matter of the project. In addition, some authors place emphasis on comprehensive understanding of the change effort and its need. (Kotter 1996, 15; see also Barker 1998, 554; Kaufman 1992, 85; Turner 1999, 58) Kotter (1996, 15) notes that the key for overcoming problems lays on the understanding of organisational change: what are the most important drivers of change and which are the underlying reasons for the opposition. Further, management should possess a clear understanding of the trade-offs included in carrying out change. Kaufman (1992, 85) emphasises that without considering trade-offs, managers easily initiate and launch programs they are not ready to support in practice.

A change effort should thus begin with an acknowledged urgency and a clear need to develop. Among different authors there is almost unanimous agreement on the argument that the people affected by the changes or participating in its planning and implementation should have a shared understanding of the reasons that led to the change effort in the first place (e.g., Carnall 1990, 24). Unfortunately, the effort needed to increase the sense of urgency is often strongly under exercised (Kotter, 1996, 35). However, Moosbrucker and Loftin (1998, 299) emphasise that an organisational crisis *alone* is not sufficient to ensure or predict a successful outcome for the project, yet it may have a significant influence if combined with other variables.

By Lewin's words: "To break open the shell of complacency and self-righteousness, it is sometimes necessary to deliberately bring about an emotional stir-up." (Lewin 1952, 229) Kotter (1996, 45-46) emphasises the importance of people to see the prospects of the future and threats lying under the visible surface. People need to take a broader, more flexible look at what they do, and what they could do for developing the organisation. Thus, adaptability and innovation should be reinforced and supported (Carnall 1990, 24). Carnall further suggests a variety of ways to achieve the appropriate understanding of organisation's standing, such as job rotation, training, the use of corroborative incentive, participation, and broad co-operation through-out the entire organisation.

2.3.9 Training

Training is an essential element in change as it enhances knowledge and skills – knowing how to do it (Barker 1998, 555; Denton 1996, 6-9). An appropriate training is furthermore a prerequisite for successful empowerment, yet many organisations do not want to confront the issue due to the amount of effort and money needed for arranging proper training. (Kotter 1996, 103-109)

In change projects, both general and job-specific training is needed. The main objective of the general training is to increase both employee willingness to change, and their understanding of the basics of organisational development. By job-specific training, they are guided to plan their own operations and working methods and to be able to work with enhanced power and responsibility. (Lanning 1996, 114)

2.3.10 Identifying key persons and forming a project organisation

A project organisation is always pulled together for a specific temporary purpose. It is an interorganisational team constructed around its mission. Because of its interorganisational nature, a matrix organisation encompassing both functional and project units is usually

formed. However, a great variety of project-driven organisational forms exists. According to Cleland (1994, 188), one extreme is the pure project organisation, where ”the project manager is given full authority to run a project as if it were a one-product company”. When we start moving towards the other extreme, the pure functional organisational department, we come across with a variety of project-functional combinations of matrix organisation.

Kotter addresses the importance of choosing the right people for the project organisation and for the guiding coalition, in particular. Different kinds of roles and qualities must be represented. Enough key players must be in the team, various points of views should be present, people with good reputation are important and, finally, proven leaders are needed, in particular. Identifying the key persons and thus forming the core of the change project is an essential part of any kind of change effort and it should be carried out in the very early stages of the progress. (Kotter 1996, 52-57)

Cleland points out that no form of project organisation is best for all projects, or even best for one single project throughout its entire life cycle. Each form has some advantages and disadvantages, yet he also notes that those projects with purely functional structures and responsibilities tend to be less successful than those with joint responsibilities and co-operation of project representatives and different functions. (Cleland 1994, 188)

2.3.11 Motivating people

The individual’s perspective and personal incentives are the driving force of change. Without everyone’s personal motivation, fast and efficient development is difficult, if not impossible. (Rigg 1993, 12; Lanning et al. 1998) However, despite the acknowledged importance of the issue, motivation itself is rarely a separate phase in a phase model or an issue in a framework of critical success factors. One explanation could be the complexity of motivation; that is, there are so many different factors affecting people’s motivation that it is more practical to place them under other critical success factors. For instance, planning, participation, top management support and communication may all have an influence on motivation (e.g., Buchanan and Huczynski 1997, 78)

There are, however, some factors more frequently discussed, when specific methods for motivating people are looked for. For example, fast and tangible results are one of the important factors in keeping the motivation high during the difficult and strenuous development work. Most individuals view the effort in a very practical way, and therefore should be provided with concrete and rapid evidence of the usefulness of the new concept. (Lanning et al. 1998)

Since in a typical project environment there are no functional hierarchies and symbols of status and power do not exist, many factors that are traditionally considered motivating staff are no longer available. Thus, in the project environment, managers must find new motivational factors, which are valued by project personnel. (Turner 1999, 429) Consequently, personnel’s personal ambitions should be widely discussed with everybody involved in the change.

2.3.12 Paying attention to culture

Burke (1994, 157) defines culture as values, norms, deeply held beliefs and attitudes, and long-standing historical precedence. French and Bell (1999, 3; see also Lewis 1996, 14) similarly regard culture as values, assumptions and beliefs held in common by organisation members. In terms of changing organisations, culture plays an important role in the literature. French and Bell (1999, 4) state that “the culture must be altered if permanent change is to

occur", and Burke (1994, 9) note that "organisation development is a process of fundamental change in an organisation culture." (see also Turner 1999; Kleiner & Corrigan 1989, 29-30)

Without forming the culture, i.e., norms of behaviour and shared values among a group of people, to support the change effort under way, it is very difficult to gain long lasting results (Kotter 1996, 148; Byars 1991, 10; Järvenpää and Eloranta 2000). Kleiner and Corrigan (1989, 29) even emphasise deliberate abandoning of old culture (ways of doing). Culture is particularly important because it can powerfully influence human behaviour, because it can be difficult to change, and because its near invisibility makes it difficult to address directly. However, Kotter (1996, 155) also argues that instead of being input, altered culture is an output of a change effort.

In fact, many of above discussed notions do not define explicitly if the change in the culture is an input or an output for organisational change. Järvenpää and Eloranta (2000) note, however, that people responsible for organisational development should ask before and during the implementation the following questions. (1) What kind of organisation are we developing, (2) what is its culture like, (3) to what kind of culture are employees socialised and (4) how the culture support or hinder development?

Burke points out that you should not try to change culture by directly attempting to change culture. Instead, you must begin with some less difficult aspects, such as behaviour. (Burke 1994, 157; see also Lewis 1996, 14) This notion thus implies that changing the way people behave – do things – is a starting point for altering the culture. In other words, culture change is a result of changing some more tangible features of organisation. That can easily be understood by examining Burke's (1999, 157) example where "becoming more service oriented and customer focused" was placed under culture change. Presumably, in many change efforts, people do not even realise that it is the culture which they are changing when focusing more on action and procedures.

In terms of cultural issues, a prominent skill for management is empathy, because in most instances organisational change is about working with people from different occupational, local and national cultures. Thus, the sensitivity to cultural differences, struggle for understanding various motives and backgrounds, and the ability to communicate in an intelligible fashion is crucial. (Carnall 1990, 114)

To summarise, culture is an important part of a change effort, albeit also very mystified and intangible aspect of it. Some people argue that without cultural change there is no change in behaviour and some that without changes in behaviour there is no change in the culture. When designing the construct, the presupposition was that first, you must change the behaviour and ways of doing things, which gradually lead to some changes in the culture, as well.

2.3.13 Risk management and dealing with resistance to change

Because of the uniqueness of a project, some uncertainty always occurs in project management. Risk management is used for reducing this uncertainty. (Turner 1999, 229; Wysocki et al. 1995, 210) According to Turner (1999, 229), the phases of risk management are identifying risks, assessing the impact, developing strategies for reducing the risk and monitoring the progress.

Resistance to change is perhaps the most well-known of the problems and risks associated with change projects (e.g., Salminen et al. 2000, 26). Pinto and Kharbanda (1995, 70-71) also clearly state that the inhibitors of a successful project implementation are primarily behavioural and organisational in nature, not technical (such as budgeting, scheduling and

monitoring). Therefore, a particular emphasis is here put on dealing with resistance to change.

According to the open-system view, organisations are homeostatic, i.e., continuously trying to maintain the current, steady state. This explains the inclination to opposing the emerging change ideas and plans, although they were well grounded and necessary for the organisation. (Goodstein and Burke 1997, 164)

The tendency of human beings to resist and fear new and unknown things and the willingness to stick to the familiar procedures has been studied widely. (e.g., Goodstein and Burke 1997; Lanning 1996; Lewin 1952) However, resistance to change is merely a symptom of problems that are more fundamental rather than the disease. Miles et al. (1995, 129) argue that, in general, managers tend to focus on treating the symptoms of a problem, not the root cause itself. This is the case because usually they have the remedies for heeling symptoms available in stock and, furthermore, because the underlying ailment causing the symptom may not be visible. However, it would be reasonable to focus scarce resources into repairing root causes of a problem and not just to react to problems whenever they emerge.

Carnall (1990, 49) remarks that, however difficult it may be to comprehend and deal with it, counter-rational behaviour, i.e., behaviour obstructing development, may be highly rational from the viewpoint of the individuals concerned. Forrester (1969, 110) discusses the same problem and refers to the "counterintuitive" behaviour of complex systems[7]. People learn in normal life that cause and effect are closely related in time and space. However, particularly in complex systems, cause and effect are not closely related either in time or in space but people still see only a narrow slice of the whole and base their opinions on that. What seems to be cause and effect may actually be coincidental symptoms or bias due to a strongly subjective viewpoint. According to Forrester (1969, 110) "the intuitive solution to the problems of complex social systems will be wrong most of the time."

Effective communication and participation are powerful tools for overcoming and avoiding misunderstandings and resistance to change. In practice, communication means talking to, and persuading key people to take action or at least accept the proposed changes. Especially face-to-face communication is encouraged. (Turner 1999, 57)

2.3.14 Co-operation

Successful changes call for co-operation across functional barriers, since most of the problems that organisations are facing today are multifunctional in nature. The problems cannot be solved inside one single function or department. (Carnall 1990, 9)

Co-operation between project managers and line mangers is also crucial for success as in most instances, after the project has been terminated, it is line managers who must maintain the service or process that has been developed in the project. For this reason, co-operation with project and line managers is crucial from the beginning of the change project. In fact, they should be held jointly responsible of the implementation and results of the project. (Eichelberger 1994, 87)

[7] The phrase "complex system" refers to a high-order, multiple loop, non-linear feedback structure. According to Forrester (1969, 107), the management structure of a corporation has all the characteristics of a complex system.

2.3.15 Project's connection to company strategy

Stace and Dunphy (1994, 55) note that without driven by an organisation's strategy, change becomes useless. Kaplan and Norton, however, argue that strategy has no generally accepted definitions or frameworks. "There are as many definitions of strategy as there are strategy gurus". However difficult it may be, companies should describe clearly what "strategy" means for them in practice, and then plan changes based on the defined strategy. (Kaplan and Norton 2001, 65; Stace and Dunphy 1994, 55; see definitions for a strategy from e.g., Ansoff 1984, 52) A good strategy is a prerequisite for company success but alone it is not sufficient. On one hand, mere strategy is useless without implementing it successfully. On the other hand, it is a waste of resources and even hazardous for the company to launch change projects without checking that they are in line with strategies. (e.g., Aaltonen et al. 2001)

Before launching change projects, strategic priorities should be clear and the same for all stakeholders. This, however, calls for prior strategic planning and clear vision of factors, which bring about competitive advantage to the organisation. (Kaufman 1992, 84; Kleiner and Corrigan 1989, 29-30)

2.3.16 Leadership

Leadership is one of the most elusive topics in project literature. Many times, authors end up describing management although their initial purpose was to discuss leadership issues. Turner refers to Stephen Covey by introducing three elements of leadership, namely *ethos*, *pathos* and *logos*. Ethos is the leader's basic value set. In other words, a good leader demonstrates that he or she has values worth working for. Pathos is the leader's relationship with the team; i.e., leader must win team's backing and support. He or she must be respected. *Logos* represents logical reasoning. Once *ethos* and *pathos* have been completed, the team is ready to be persuaded by logic. Unfortunately, Western managers often try only to use *logos*, although it is not effective without the other two. (Turner 1999, 434)

Kotter also emphasises *ethos* and *pathos* when defining leadership as "the process of moving a group (or groups) in some direction through mostly noncoercive means". Effective leadership is defined as "leadership that produces movement in the long-term best interests of the group(s)". In other words, good leaders do not march people off a cliff or waste their scarce resources. (Kotter 1988, 5; Holland 1985, 9; see also Schneider and Goldwasser 1998, 44) Also in change projects, good leaders sincerely want the best for their group(s) of people and do it in an efficient way.

2.3.17 Summary of potential success factors in change projects

The contents of this chapter has a particular role in designing a new construct, since it is basically build on critical success factors in change projects. Hence, I provided a thorough insight in to the subject by introducing results from previous studies and by combining the main ideas and opinions on critical steps, phases, and actions from a comprehensive literature review. This chapter summarises all potential success factors in change projects by defining them and presenting criteria which are later used for connecting the construct with existing theories. Potential success factors include elements from different disciplines and scholars discussed earlier in this chapter.

Table 5 Summary of potential success factors in change projects

Potential success factors	Definition	Criteria
Abundant and purposeful participation	Involving those affected by the changes in planning and implementation	• Involvement is perceived purposeful and useful for achieving goals • Participation is professionally managed and lead
Management support	Role and actions of managers who have authority over issues and resources critical for project success	• Emphasising the comprehension of the complex nature of a change effort and the prerequisites for a successful change project • Management acting as role model • Managers who have authority over issues and resources in the project supporting it by actions
Effective communication	Distributing information about the changes and gathering feedback from the people	• Distributing information about the changes to all in the organisation over the entire project • Discussing planned changes and potential problems among employees • Gathering feedback, fostering candid discussion • Encouraging the use of multiple channels in communication
Control and feedback on progress	Monitoring and controlling the progress. Regularly communicating and discussing the progress	• Monitoring and evaluating the progress • Ensuring effective and efficient implementation • Discussing progress and problems with the project team on regular basis • Striving for tangible short terms results • Controlling the adherence to the schedule and budget
Supporting environment	Ensuring that all organisational structures and procedures support the change	• Emphasising the system nature of the organisation • Promoting encompassing project scope • Encouraging co-operation across the entire organisation • Supporting metrics and reward systems • Supporting organisational structures and reporting • Supporting physical settings and environment • Supporting superior behaviour
Vision and clear goals	Defining a vision and goals for the change	• Defining organisation's future vision and specific, measurable goals for the project • Communicating and discussing vision • Ensuring understanding over the goals • Defining short term goals
Purposeful planning	Planning the change process	• Planning change as a project (goals, scope, budget, schedule and organisation) • Developing project WBS • Emphasising thorough planning, yet not planning in more detail than can be executed and controlled
Clear need for change	Identifying and communicating the need for change	• Carrying out current state analysis • Making sure everybody affected by the change understand why change is essential • Identifying the need for change • Communicating and discussing the need
Training	Training and educating people both in the project team and in the "target" organisation	• Training and educating the project team on both implementing the change and the new procedures to be implemented • Training and educating people who need to acquire new capabilities due to the changes • Provision of basic training on business basics • Provision of job specific training • Emphasising practical utility in training

Identifying key persons and forming a project organisation	Identifying important people and organising the change	• Identifying, participating and motivating those individuals that may most significantly affect the success or failure of the project • Establishing project organisation • Assigning a full time project manager • Building project organisation conducive to the overall objectives of the project • Defining roles, responsibilities and authorities for the project • Ensuring that everybody has internalised his/her role in the change effort

Motivating people	Getting people motivated and committed to changes through active motivational efforts	• Increasing commitment and enthusiasm towards the project
		  • Defining project member needs
		  • Participation
		  • Fast, tangible results
		  • Ensuring the credibility of the project
		  • Emphasising personal benefit
		  • Establishing rewards program
		• Keeping the motivation high throughout the entire project

Paying attention to culture	Paying attention to organisation's culture	• Considering the change also a challenge of changing the culture
Risk management and dealing with resistance to change	Preventing and solving problems, resistance to change, in particular	• Identifying potential problems • Planning preventive actions • Discussing potential problems with those affected by the change • Active and prompt solving of emerging problems
Co-operation	Co-operation between different groups and people	• Co-operation across the functional barriers • Co-operation between line management and project management
Project's link to company strategy	Change effort's connection to strategies	• Emphasising project's connection to organisation's strategy
Leadership	Behaviour and actions of the person or persons leading the change	• Being interested in people's interests in the project team • Putting stress on managers' exemplary behaviour • Enhancing project manager's enthusiasm and comprehension over the project

2.4 Concept of innovation implementation

Chapter 2.4 continues with the literature review by introducing and discussing the concept of innovation implementation.

The innovation is a technology or a practice "being used for the first time by members of an organisation, whether or not other organisations have used it previously" (Nord & Tucker 1987, 6; see also Rogers 1995, 11). According to Klein and Sorra (1996, 1055) "Innovation implementation is the process of gaining targeted organisational members' appropriate and committed use of an innovation". Rogers (1995, 201-203) in turn defines "implementation" as one stage of becoming a user of the innovation[8]. All five stages in Rogers' approach are knowledge, persuasion, decision, implementation and confirmation (Rogers 1995, 202; see also Pankakoski 1998, 45; Tornatzky & Fleischer 1990, 29).

There are two ways to look at the innovation process (Klein & Sorra 1996, 1057). The first way is to look it from the developers' or source perspective. These source-based stage

[8] According to Rogers (1995, 5), *diffusion of innovation* is "the process by which an innovation is communicated through certain channels over time among the members of a social system". Rogers emphasises the role of communication in innovation diffusion. Communication is especially used for reducing uncertainty related with the innovation. (Rogers 1995, 6) Thus, change management and diffusion of innovations contain similar characteristics.

models describe the creation of a new product or service from first ideas to the marketing of the new product. Thus, the innovation is a new product or service that an inventor has created for the market (Klein & Sorra 1996, 1057; see also Rogers 1995, 132; Tornatzky & Fleischer 1990, 29).

Another way to look at the innovation implementation is to step into the role of the prospective user. User-based stage models trace the process from user awareness of a need to the incorporation of the innovation in the users' behavioural repertoire (e.g., awareness, selection, adoption, implementation, routinisation). (Tornatzky & Fleischer 1990, 29; Pankakoski 1998, 45)

This study combines these two ways to look at the innovation process. On one hand, the emphasis is put on describing the creation of a new construct (innovation) as it provides transparency on the research process and enhances the reliability and the validity of the research. On the other hand, the role of a potential user also is important and salient in reporting as one purpose is to describe how users used and perceived the construct.

According to Klein and Sorra (1996, 1055), the factors influencing the success of innovation implementation are (a) the strength of an organisation's climate for the implementation of that innovation and (b) the fit of that innovation to targeted users' values.[9] Klein and Sorra propose that the climate for the innovation implementation refers to "targeted employees' perceptions of the extend to which their use of a specific innovation is rewarded, supported, and expected within their organisation." The climate for innovation thus does not include employees' satisfaction with the innovation itself; neither does it refer to the satisfaction with their jobs or organisation in general. (Klein and Sorra, 1996, 1060)

In other words, a positive innovation climate facilitates innovation penetration by (a) ensuring adequate employee skills for innovation use, (b) providing incentives for innovation use and disincentives for innovation avoidance, and (c) removing hindrances and obstacles to innovation use. (Klein and Sorra 1996, 1060)

Although the innovation climate is of great support in innovation implementation, it does not ensure a skilful, internalised, and committed innovation use. In addition to supporting climate, a good fit of the innovation to targeted users' values is also needed. That is, employees who consider innovation use to be in line with their values are likely to be committed and enthusiastic in their use of the innovation (Klein and Sorra 1996, 1061; see also Lillrank 1995, 989)

"Innovation-values fit describes the extent to which targeted users perceive that the use of the innovation will foster (or, conversely, inhibit) the fulfilment of their values" (Klein and Sorra 1996, 1063). When considering employees' values, Klein and Sorra refer to organisational and group values (e.g., Schein 1992, 9) since their aim is to explain organisational implementation effectiveness, not factors causing individual differences in implementation use.

Opposition towards innovation is bound to rise only when simultaneously an innovation climate is strong and innovation-values fit is poor, because in that case on one hand the pressure to use the innovation is high but on the other hand employees' commitment and motivation is low. (Klein and Sorra 1996, 1067)

[9] Later, in within case descriptions, both innovation climate and value fit are discussed to enhance the understanding on factors influencing the success of innovation implementation in each case.

An organisation's failure to achieve the intended benefits on an innovation may reflect either a failure of implementation or the failure of the innovation. (Klein and Sorra 1996, 1073) Further, Klein and Sorra claim that innovation implementation may result in one of the following three outcomes:

1. Implementation is effective, and the use of the innovation enhances the performance of organisation
2. Implementation is effective, but organisation's performance is not developed
3. Implementation fails

As the emphasis in this study is on the innovation (the construct) itself, most of the work is placed on discovering more about the strengths and weaknesses of the construct – not about its implementation. However, the implementation process is also discussed with case studies because, for understanding cases better, it is purposeful to handle both issues, i.e., the failure or success of implementation and the failure or success of the innovation (construct).[10]

2.5 Summary and conclusions

To conclude Chapter 2, I first summarise the main findings regarding the first research question, i.e., the need for a new construct for managing change projects. There seems to be plenty of models and frameworks for managing change in organisations. However, these models are more or less designed for visioning, planning changes on a strategic level or giving an overall view on the change effort. They do not offer sufficiently practical instructions or tools for carrying out changes in practice. Practical constructs for managing and leading changes in organisations at an operative level are thus needed. The evidence from the literature review corroborates my initial suggestion that there is a need for a novel practical construct especially for change project managers.

Another observation in this chapter is on one hand, the need to include notions and methods of traditional project management in change projects. On the other hand, one should keep in mind that organisational changes have many distinctive characteristics, which need to be taken into account during planning and implementation. In summary: the literature review implies that there is a need for a construct that includes at least the following characteristics:

- Practical
- For an operative level
- Including traditional project management methods
- Considering distinctive features of changing organisations

As the intention was to design a construct covering all phases of a change project and not focusing on any particular kind of change, two further characteristics may be added to the list; they are:

- Generic
- Comprehensive

[10] The characters of an innovation may have an effect on the success of the implementation process. For instance, the easiness to modify the innovation for user's own purposes may have an influence on the implementation. For this reason, it is important to check both the implementation process and the innovation itself.

3 RESEARCH PARADIGM AND STRATEGIES

Exploring the existing literature made it possible to sharpen the focus of the research and to define more detailed research questions. Hence, Chapter *3* starts with defining and discussing the research issue, the objective and the research questions of the thesis. Then, it plunges into the literature review by shedding some light on different paradigms and research strategies relevant to the research problem. The objective of this chapter is not to provide new typological structures but simply to offer a summary of existing notions and statements and also to define the paradigms and strategies used in this thesis. This all forms a solid basis for choosing the criteria for evaluating the research.

3.1 Research problem and questions

This chapter is one of the most important in the entire thesis since its role is to act as the basis and rationale for the rest of the work.

The *issue* in my research was change management in organisations and, more precisely, practical constructs for carrying out these change efforts. Change projects seem to fail very often and many different sources support the existence of the need for a new construct for project managers to facilitate and support planning and implementing change projects.

The objectives of this research are thus:

1. to solve the *research problem*, i.e., to answer the above described need by designing a novel construct for change project mangers, and
2. to enhance the knowledge and to gain new understanding on constructs assisting project managers carry out change projects.

The first research question "*is there a need for a new practical construct for change project managers to facilitate them plan and implement change projects?"* was made explicit in Chapter 1. Chapter 2 gave some ideas for specifying the question or even for giving an answer to it. However, I do not want to answer the question, yet, but first to explore the research issue more thoroughly as described later in Chapter 5 "Preunderstanding of the research". If Chapter 2 explores the existing theory, Chapter 5 introduces data from the field, i.e., how experienced change project managers perceive the need for a new construct.

Chapter 2 makes it possible to focus the area of the study and, consequently, to define relevant research questions in detail. The questions of the research are:

1. Is there a need for a new practical construct for change project managers to facilitate them to plan and implement change projects?

If yes:

2. Is it possible to develop such a construct?

If yes:

3. What should the construct be like to facilitate project managers to plan and implement change projects?

The third research question could have been broken down into more detailed questions, such as "What kind of information should the construct contain?" or "In what kind of format and structure should the information be offered?" These questions did intrigue me but I did not

especially want to distinguish contents from the structure but to explore all emerging issues that had something to do with the use, usability or usefulness of the construct.

In Stake's words: "Perhaps the most difficult task of the research is to define good research problems and questions that will direct the looking and the thinking enough and not too much". Research questions play a critical role especially in case studies, because cases are usually complex and ambiguous and the phenomena fluid and elusive. (Stake 1995, 15, 33)

The development of research problems and questions is usually an evolving, changing, and incremental process, yet it is always important to keep in mind the prominent problem(s) of the research (Stake 1995, 18-28). Some researchers have argued that the research focus may emerge even after the data collection has begun. (Eisenhardt 1989a, 536*;* Gersick, 1988)

In this report, the main means for achieving the research objectives and for answering the research questions are described in the list below. The list guided me to find an appropriate structure and contents for this thesis in terms of offering readers an opportunity to review the process of the research. The means are as follows:

- To discuss the relevance of the research problem and to achieve theoretical preunderstanding and elaboration of knowledge on the problem domain and related topics (Chapters 1 and 2)
- To explicitly state the research questions and the evaluation criteria for the research and to justify the methodology used in the research (Chapter 3)
- To describe data sources, methods for data collection and the process of interpretation and making inferences (Chapter 4)
- To achieve elaboration in practice, i.e., to enhance the understanding of the research problem in practice. Also to further understand and to justify the potential utility of a new construct in practice (Chapter 5)
- To specify the criteria for a new construct and to describe the process of designing and developing (Chapter 6)
- To describe the structure and contents of the novel construct (Chapter 7.1)
- To check if the construct meets the criteria defined in Chapter 6 (Chapter 7)
- To prove the theoretical novelty and connection to the existing theories (Chapter 7)
- To evaluate and discuss the contents and the practical functionality, i.e., the usability and usefulness of the construct. *How* was the construct working and *why* was it working like that? (Chapter 7)
- To sum up the research findings and to answer the research questions (chapter 8)
- To evaluate the research, to discuss both epistemic and practical contribution of the research and to discuss the generalisations of the research outcome (Chapter 9)
- To describe cases used in the study (Appendix 10)

I do not attempt to evaluate the effectiveness of the construct/innovation implementation or dissemination in particular, yet I do handle the subject to some extend. That is, because it is always a challenging task to distinguish between the role of the product itself and its dissemination practices in the success of the product deployment (e.g., Klein and Sorra 1996, 1073). Neither do I focus on establishing new guidelines for product development processes. However, the process of developing the construct is described in detail to offer the reader a

chance to follow different phases of the research and in this way to judge the reliability and validity of the research results.[11]

3.2 Scientific paradigms

Discussing and describing prominent and distinguishing features of science is considered an important part of the philosophy of science. In practice, it means defining the features needed for guaranteeing the scientific nature of the research. According to Niiniluoto (1980, 81), there may be some universal characteristics for all good scientific work. However, instead of focusing on the results and outcome of the research, the emphasis should be put on the research process. Kasanen et al. (1991, 318-320) note that, as science is evolving over time, it is not meaningful to nail down requirements for all scientific work, but instead, to stay open for new ideas and areas for development.

Abnor and Bjerke (1997, 21) address that there are many ways of creating knowledge about the world and one way can be called scientific. In the scientific way of creating knowledge, it is essential that (1) the results can be supported by empirical reality, (2) reasonably clearly formulated rules are applied and (3) that every member of society has a legitimate right to protection from public scrutiny of his or her private life. (Abnor and Bjerke 1997, 22-23)

When conducting scientific research and when reading material about science, one apparently faces philosophical discussion and scientific jargon, e.g., terms such as paradigm, positivism, heuristics, research strategy and research approach. There are numerous books on scientific research (e.g., Gummesson 1991; Miles and Huberman 1994; Patton 1990; Yin 1984), yet the challenge still seems to be to agree on general guidelines and definitions connected with research design and implementation. For instance, one researcher talks about research strategies (Yin 1984, 16), whereas another one uses word “techniques” (Susman and Evered 1978, 589) when referring to similar issues.

Scientific paradigm comprises the basic values and ways of perceiving the world (Gummesson 1993, 12; Kasanen et al. 1991, 313; Guba and Lincoln 1994, 107). Abnor and Bjerke (1997, 12) refer to Thomas Kuhn – the inventor of the “paradigm” concept – when defining that paradigms are new research patterns that replace the old ones, after heavy arguments, in the scientific community. Hence, it is useful to start the research with exploring some existing and recognised paradigms and, if possible or appropriate, to choose the one that fits best to the nature and objectives of the research.

Particularly in the end of the 1970’s, it was commonly claimed that the science of organisations was at a crisis since the outcomes of research had become less and less useful for solving practical problems in organisations. All this had lead to the separation of theory and practice and, increasingly often, only producers of research, not practitioners, read scientific publications. (Susman and Evered 1978, 582; Kasanen et al. 1991, 304; Guba and Lincoln 1994, 106)

Susman end Evered (1978, 582; see also Kasanen et al. 1991, 304) claim that the crisis had risen because the organisational researchers had adopted a *positivist* way of both conducting and judging research and thus addressing value-free, logical and empirical methods and procedures. However, the most important prerequisites for this main stream science[12], i.e.,

[11] According to Stake (1995, 47-48), a good study report provides vicarious experiences and thus offers the reader a chance to generalise and judge the research from their own experiences and feelings, not only from objective data received from a particular case or cases.

[12] Positivist science is sometimes called “normal” science, “main stream” science or traditional research. (Susman and Evered 1978, 583).

objectivity and generalisability, are probably not the most suitable for applied research and research of organisational behaviour (Babüroglu and Ravn 1992, 26; Chisholm and Elden 1993; 276; Kasanen et al. 1991, 304; Peter and Olson 1983, 118; Susman and Evered 1978, 596). Babüroglu and Ravn (1992, 26) further propose that deficiencies of positivist science in organisational research lay namely on the meaning of the word "positive"; that is, actual, certain and exact**.** In most instances, social and organisational development does not depend on the ability to quantify and measure it (Babüroglu and Ravn 1992, 30).

The answer to the above-described problem is suggested *hermeneutic paradigm*. Positivism is typically related to quantitative methods, positivism, i.e., eliminating subjective values from the science and large number of data, where as hermeneutics tolerates subjectivity and considers it as a natural and unavoidable part of conducting research (Kasanen et al. 1991, 313). It is the tolerance of subjectivity that is maybe the most relevant feature in the hermeneutics and other interpreting science distinguishing it from positivistic paradigm. (Kasanen et al. 1991, 313)

The subjective nature of hermeneutics takes many different forms in the research. For instance, while in the research process of positivist paradigm, data collection and analysis are two clearly separate activities, in hermeneutic paradigm they take place simultaneously. (Gummesson 1993, 13) Furthermore, there is no clear line and distinction between description and explanation, i.e., data are not unambiguous and objective entities but they can be "found" and generated through a process of choice (Gummesson 1993, 13; see also Eisenhardt 1989a). Therefore, instead of talking about data collection and analysis, Gummesson prefers to use terms "access to reality", "data generation" and "interpretation".

Basically, choosing between paradigms is a matter of either chasing for unambiguous, indisputable causal relationships, stated in mathematical formulas and tables and hoping for general applicability of their results, or seeking deep understanding of the phenomena; wanting to know how and why? *How is it working and why is it working like that?* (Gummesson 1993, 129, Niiniluoto 1980, 71) Susman and Evered (1978, 599-600) further suggest that when the reason for conducting the research is to solve a problem, researchers should be sceptical of positivist science.

Because the typical characteristics of positivist science approach are not very applicable for research of organisational behaviour, Susman and Evered (1978, 596) suggest some alternative criteria and methods of science:

- *Explanation versus understanding:* Instead of looking for causal relationships and probabilities, a more appropriate way of "explaining" organisations is trying to understand them better: how do they work and why do they work like that?
- *Prediction versus making things happen*. One purpose of research may be to co-produce solutions that work for clients. Thus, interference by the researcher is inevitable and even encouraged.
- *Deduction and induction versus conjectures*. Susman and Evered believe, that most of the useful knowledge about social systems has been the result of conjecturing. In other words, we make assumptions about organisations by pattern recognition or by imagining the whole from the knowledge of some of its parts. Then we further test our conjectures by taking part in the action and by observing the results.
- *Detachment versus engagement*. The positivist approach emphasises detached, neutral, independent and objective role of a researcher. However, it does not meet the requirements of all research, since the success of the research may rather depend on understanding the values of relevant informants, since they guide the selection of means for solving a problem and develop the commitment to a certain solution.

- *Contemplation versus action*. Sometimes, the outcome of an action cannot be seen before taking the action. Only some trivial consequences can be predicted.

Yet the juxtaposition of positivist and hermeneutic paradigms is salient and obvious in the literature, by no means are they mutually exclusive approaches – at least in terms of the research methods applied. For instance, although hermeneutics has a qualitative label on it, the combination of quantitative and qualitative data may be highly productive. That is, because on one hand quantitative evidence may reveal factors and relationships that are not evident to the researcher whereas, on the other hand, qualitative data helps the researcher to understand the rationale and reasons for relationships revealed by the quantitative data. (Eisenhardt 1989a, 538)

When considering the fundamentals of this particular research, perhaps the concepts of *applied science* and *design science* have the most to offer as a methodological background. Niiniluoto (1992, 1) hits the point when beginning his manuscript as follows: "Philosophers have mostly been concerned with sciences which explain and interpret the world; now it is time to pay attention to the sciences which also change the world". By that he refers to the importance of applied science (e.g., engineering and management sciences) and prerequisites in terms of the research process and the outcome.

According to Niiniluoto (1992, 3) the distinction between research and development is couched as a difference in their products, that is knowledge vs. artefacts. In other words, research is defined as the pursuit of knowledge, whereas the purpose of product development is to develop new products, methods and means of production. Applied science (and research) produce new knowledge which is intended to be useful for the specific purpose of increasing the effectiveness of some human activity." Consequently, the outcome of applied research can be judged both in terms of epistemic and practical utilities. (Niiniluoto 1992, 7)

Besides epistemic utility, the knowledge provided by applied science is supposed to have instrumental value, which suggests that applied science is governed by the technical interest of controlling the world. (Niiniluoto 1992, 8) This notion leads to the concept of *design science*, which refers to the art of research aiming at knowledge that is useful to the activity of design[13]. The distinction between design science and the more traditional model of science (e.g., descriptive sciences) lies namely on its concern with design, i.e., not how things are, but "how things ought to be in order to achieve goals". (Niiniluoto 1992, 11)

This normative nature of design science leads to the challenge of constituting knowledge. The solution to this problem can, however, be found in Von Wright´s concept of technical norm, which is a "factual statement about the relation between means and ends". (Niiniluoto 1992, 15, Kasanen et al. 1991, 303) Generally, a technical norm is a statement of the form: "If you want A and you believe you are in situation B, then you ought to do X". Probably the most distinctive feature of design science and technical norm is that it does not rely on causal laws, whereas descriptive science strongly emphasise the causality of the norm: "X causes A in situation B" or "X tends to cause (with probability p) A in situation B". (Niiniluoto 1992, 9) The border between descriptive and design science may depend on the question about human manipulability of causal factors. For instance, astronomy and meteorology are typical descriptive and predictive sciences – we are not able to move the moon in order to cause an eclipse. However, we are able to do plenty of things in order to make an organisational transformation effort a success.

[13] Referring to Niiniluoto (1992, 11), the concept of design here includes all human activities, i.e. the production, preparation, or manipulation of natural systems or artefacts.

There are some ways to support technical norms, too. Niiniluoto distinguishes two methods, which are "*from above*" and "*from below*". The former means derivation of a technical norm from descriptive statements (e.g., causal laws) provided by basic research. If the cause factor X is manipulable or can be chosen by human beings, then the causal law can be converted to a technical norm: if we want to achieve the aim A, and the situation is of type B, then we should bring about the cause X. For example, "in order to demagnetise iron, heat it to above 770 °C". This technical norm was derived from statement "magnetism of iron disappears above the temperature 770 °C". (Niiniluoto 1992, 18-19)

Often, however, there are no general theories available from which a technical norm could be deduced. In that case, the technical norm can be supported and verified "from below" by using trial-and-error procedures and tests to study and find the optimal ways to achieve the desired goals. (Niiniluoto 1992, 18-19) That was also the main method used in this research.

3.3 Potential research strategies

Yin (1984, 13-16) introduces the word "strategy" when referring both to different units of analysis and the methods for analysing them. When discussing different strategies, he refers to different data sources and techniques or methods for analysing the data. (see also Kasanen et al. 1991, 313; Susman and Evered 1978, 589). Instead of strategies, Kasanen et al. talk about research approaches when referring to the researcher's basic methodological choices related to both philosophical domains and the methods used in the research.

Research strategy should never be chosen solely on the basis of the research problem or questions, but also some more intangible phenomena, such as the researcher's ideologies, comprehension of ideal science, and ethics are connected with the decision making. In other words, the concept of paradigm should be discussed before the choice of the research strategy. (Kasanen et al. 1991, 313; Arbnor and Bjerke 1997, 6) Gummesson (1993, 15; see also Arbnor and Bjerke 1997, 6) further adds that the selection and the use of methods must be related to the scientific paradigm used in the study, not only to the research questions or the nature of data source. Arbnor and Bjerke (1997, 9) summarise that methods are "guiding principles for the creation of knowledge".

Yin (1984, 13-16) notes that we have often been taught to believe that case studies are to be used in the exploratory phase of the study, that surveys and histories are appropriate for the descriptive phase, and that experiments are the only way of conducting explanatory or causal inquiries. However, he points out that the notion is incorrect since there is strong evidence in favour of using each strategy in all the different phases of the research. Thus, the phase or hierarchy of the research is not the factor that distinguishes the strategies from each other. Moreover, according to Yin (1984, 17), strategies refer to (Table 6):

1. The type of research question
2. Extent of control over behavioural events
3. Degree of focus on contemporary as opposed to historical events

Table 6 Relevant situations for different research strategies (Yin 1984, 17)

Strategy	Form of research question	Requires control over behavioural events?	Focuses on contemporary events
Experiment	How, why	Yes	Yes
Survey	Who, what, where, how many, how much	No	Yes
Archival analysis	Who, what, where, how many, how much	No	Yes/no
History	How, why	No	No
Case study	How, why	No	yes

Summarily it can be stated that there may be situations in which all research strategies would be appropriate. Further, more than one strategy can be used for conducting a research and especially for offering reliable and valid answers to the research questions (Yin 1984, 20). In other words, various strategies are not mutually exclusive, yet it is possible to identify situations where a specific strategy has significant and distinct advantages over other strategies. Later, I will use "strategy" to represent the choice of both data source and the methods for collecting and analysing the data and thus generating new knowledge.

The following chapters (3.3.1-3.3.4) introduce four typical hermeneutic research strategies: qualitative, constructive, case study and action research. That is followed by discussion on the research strategies that were used in this study.

3.3.1 Qualitative research

Qualitative research is often defined as research in which qualitative, e.g., descriptive data is used and quantitative research as research in which quantitative, i.e., numerical data is gathered. However, Stake (1995, 37) suggests that one of the most characterising differences between quantitative and qualitative research is the knowledge that is searched for. The difference is thus not directly related to the nature of quantitative and qualitative data, but mostly to the purpose of the research, i.e., are we looking for cause-effect relationships or happenings. Quantitative researchers rely on and emphasise explanation and control, where as qualitative researchers press for understanding the complex interrelationships of the phenomenon. (Stake 1995, 37) Aguinis (1993, 422) summarises that an exclusive use of quantitative methods may not help to increase the knowledge about complex, multicausal organisational phenomena.

Stake (1995, 37) further highlights three major differences between quantitative and qualitative research: (1) the distinction between explanation and understanding as the purpose of the inquiry, (2) the distinction between a personal and impersonal role for the researcher, and (3) a distinction between knowledge discovered and knowledge constructed. Gummesson (1993, 15) emphasises similar characteristics by using phrases access to the reality, getting close to the real phenomenon, and researchers' personal involvement.

Several authors point out how common it is to have both qualitative and quantitative features in a research – even though the researcher him or herself does not necessarily notice or acknowledge it (Eisenhardt 1989a, 534-535; Stake 1995, 36; Yin 1984, 85). On one hand, each qualitative study uses enumeration and recognises differences-in-amount and, on the other hand, in each quantitative study the natural language description and researcher interpretation plays a certain role (Stake 1995, 36).

The purpose of research is not necessarily mapping the world and finding cause-effect relationships. Moreover, research can be about increasing our understanding of the world and the relationships in it as a whole. For this reason, descriptions with an author's interpretations, experiential understanding, and multiple realities are prominent features of qualitative research. (Stake 1995, 43; Maxwell 1996, 17) Alternatively, in Jick's words (1979, 602) research which involves qualitative methods has a great potential for creating a "holistic work" or "thick description".

3.3.2 Constructive research

According to Kasanen et al. (1991, 302; see also Meredith 1992, 5) a construct is a "solution for a real problem". The objective of constructive research is thus to create a solution, which is something new and different from the previous ones. Furthermore, by using the construct, it is possible to move from the current state to the defined and desired goal. Kasanen et al. (1991, 302) note that constructive research may also be seen as a form of applied research, the purpose of which is to produce new knowledge aiming at an application or other goal. Thus, the results of constructive research are technical norms in nature.

Constructive research has the following characteristics (Figure 7): (Kasanen et al. 1991, 318)

1. It produces an innovative and theoretically grounded solution to a relevant problem
2. The result of the research is proven to be useful
3. It can be suggested that the construct is also applicable in other environments

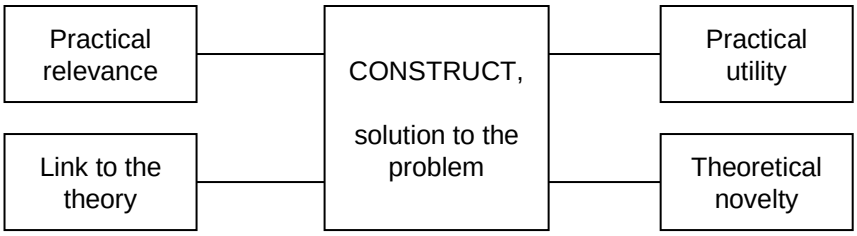

Figure 7 Elements of constructive research (Kasanen et al. 1991, 306)

Constructive research is also normative research (a normative theory, see e.g., Kast and Rosenzweig 1985, 70), i.e., it is about determinedly solving problems by finding innovative solutions, empirically testing them and discussing their applicability in other environments. (Kasanen et al. 1991, 318) It typically includes case studies, yet using only a limited number of research cases. It may also include both quantitative and qualitative research techniques. However, the normative nature of the research distinguishes it from positivistic science.

As a summary, constructive research is particularly applicable in situations where a solution is needed for solving a practical problem. A knowledge creation process can be covered by constructive research, as well. (Kasanen et al. 1991) However, the request for theoretical novelty, link to the existing theory, and discussion over the applicability in other situations distinguishes it from pure product development and problem solving.

In addition to criteria for all good scientific work, i.e., objectivity, critical view, autonomy, and progress, for applied research it is particularly required that its results are relevant, simple, and easy to use. Kasanen et al. even argue that the criteria for judging applied

research have thus more to do with usefulness than truthfulness (Kasanen et al. 1991, 304; see also Niiniluoto 1992, 7).

Thomas and Tymon argued in 1982 that the abundant notions of rigorous ways of conducting scientific research have directed energy away from the relevance and usefulness of research, let alone the practical utility of the findings. Furthermore, they conclude that although a rigorous research is a necessity for credibility, there is a clear need for developing standards of practical relevance, since they seem to be vague and by no means widely recognised. According to Thomas and Tymon, the relevance of research results cannot be assessed without identifying a group of practitioners as potential users of the results and to regularly collect feedback from these practitioners. (Thomas and Tymon 1982, 350; see also Peters and Waterman 1982, 156) That was one of the methods used in this research.

3.3.3 Case study research

Stake (1995, 2-4) distinguishes three different types of case studies: intrinsic, instrumental, and collective case studies. In the first one, the emphasis is put on understanding one particular case, not to learn about other cases or to solve a general problem. In instrumental case studies, however, a case is used as a mean (an instrument) for answering a research question or solving a general problem. Collective case studies are also instrumental studies with the special characteristics of comprising several cases. Furthermore, case studies may either be descriptive (describing, analysing, explaining, and understanding) or normative (modelling, guiding, and suggesting) in nature (Kasanen et al. 1991, 315). They may also involve either only one case or multiple cases, and numerous ways to analyse the results (Yin 1984, 133; see also Dyer and Wilkins 1991, 614) Yin (1984, 20) further defines case study as an empirical inquiry that:

- investigates a contemporary phenomenon within its real-life context; when
- the boundaries between phenomenon and context are not clearly evident; and in which
- multiple sources of evidence are used.

Examples are, however, not cases because you can always, in retrospect, find good examples of what ever idea comes into your mind. Thus, examples are not evidence, even though they may trigger thoughts and ideas for researchers when they study them in the light their own experience and needs. (Gummesson 1993, 7; Glaser & Strauss 1967, 5)

Although qualitative methods, interviews in particular, are commonly used in case studies and some times even interpreted equivalent in meaning, they are not the same. Furthermore, case studies are not necessarily qualitative in nature. In general, case study research supports the deployment of a variety of methods (Gummesson 1993, 17). In addition to qualitative methods, also quantitative methods can and are often appropriate and rewarding. However, quantitative methods are often overrated in the study of business subjects and economics and misused, i.e., considered as methods more scientific than other methods. (Gummesson 1993, 6; see also Eisenhardt 1989a, 534-535; Ellram 1996, 94; Stake 1995, 29; Thomas & Tymon 1982, 346)

The underlying objective for conducting case study research is to gain a better understanding of complex phenomena such as change processes (Stake 1995, 5; Gummesson 1993, 6). However, case studies may be used for many different purposes (e.g., Eisenhardt 1989a, 535; Ellram 1996, 97; Gersick, 1988; Harris & Sutton, 1986; Pinfield, 1986; Yin 1984), e.g., for creating a theory, for testing created theories, for producing a description, or just for follow up to surveys to provide a more profound insight into the phenomena.

Case study strategy is particularly applicable when**:** "A "how" or "why" question is being asked about a contemporary set of events, over which the investigator has little or no control." (Yin 1984, 20; see also Ellram 1996, 97) In addition, a common application of case studies is first to build a theory using case study data and, thereafter, to test it by using further case studies, survey data or another suitable method. (Ellram 1996, 97)

Yin (1984, 25) also notes that case studies have a special role in evaluation research, because case studies (1) can explain the causal links in real life interventions that are too complex for being analysed e.g., by surveys or experimental strategies. Case studies can also well (2) describe a real life situation, and (3) usually contain illustrative and descriptive parts, which in turn may help the evaluation. Finally, (4) case studies are effective in exploring interventions with no clear, single set of outcomes.

3.3.4 Action research

Kurt Lewin receives the credit for introducing the term "action research" (AR) in 1946 for combining the generation of theory with changing the social system through the researcher acting in the social system. (Lewin 1946; see also Babüroglu and Ravn 1992, 19; Chisholm and Elden 1993, 287; Elden and Chisholm 1993, 121; Gummesson 1993, 53; Susman and Evered 1978, 586) Action researchers demand that research should be relevant for scholars, whose purpose is to advance the current state of knowledge, and for practitioners who, in turn, struggle with their problems in a system. Furthermore, action research approach should contain the normative objective to produce theories of desirable futures. (Babüroglu and Ravn 1992, 19) Susman and Evered base their definition of action research on Rapoport's (1970, 499) earlier definition:

> "Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework."

by adding a third aim, that is, to develop the self-help competencies of people facing problems (Susman and Evered 1978, 587-588). According to Eden and Huxham (1996, 75), in action research "the research output results from an involvement with members of an organisation over a matter which is of genuine concern to them". They continue by suggesting that action research has been widely misused by considering all management consultancy projects to be action research. Many of them are not action research, but could be if some basic guidelines were followed in planning and implementing the consulting project. In that way, the challenges of both consultancy and research could be met simultaneously. In fact, they should always be met in good action research. (Eden and Huxham 1996, 76, 78; Argyris and Schon 1991, 85) Because action research embeds the input of both practitioners and researchers in the research effort, it is applicable to the understanding, planning, and implementing of change in business firms and other organisations, in particular (Gummesson 1993, 54; see also Greenwood et al. 1993, 175).

Action research does not try to formulate universal laws, but more or less situation-specific insights. Furthermore, action research is both an approach to problem solving and a problem solving process. Thus it includes a model or a paradigm and a specified series of activities and events (French and Bell 1973, 84).

- *Action research as a process:* AR is the process of systematically collecting research data about an ongoing system relative to some objective, goal, or need of that system. (French and Bell 1973, 84).

- *AR as an approach:* AR is the application of the scientific method of fact-finding and experimentation to practical problems requiring action solutions and involving the collaboration and co-operation of scientists, practitioners and laymen. (French and Bell 1973, 87).

Argyris et al. (1985, 8) wish to highlight the differences between action research and action science. According to them, action science is an evolutionary version of action research, i.e., it brings theory building into traditional action research. They namely point out that action science has the potential of creating new knowledge, not only to solve practical problems. One of the main questions and challenges in defining action science has been the following: is it possible and appropriate to combine practice and science? Can science be made out of practical problems and their solutions? Basically, action science is used as a word to emphasise the scientific nature of solving practical problems in organisations.[14]

3.4 Paradigms and research strategies in this study

I was seeking for deep understanding of the phenomenon that is change projects and particularly constructs for facilitating their planning and implementation. Basically, I wanted to know how the designed construct was working and why it was working like that and, by doing that, to answer the research questions, to enhance the knowledge and to gain new understanding on constructs assisting project managers carry out change projects. In this light, the hermeneutics paradigm seemed quite natural to choose. I tried both to find useful solutions for practitioners and new knowledge for scholars. The process and the results were not certain or obtained purely via objective procedures but, rather, subjectivity, interpretations and even conjecturing (see e.g., Susman and Evered 1978, 596) played a significant role in finding new knowledge and solutions. Again, the research process was iterative by nature and I did not try to demonstrate unambiguous, indisputable causal relationships, stated in mathematical formulas and tables. Rather, I tried to solve problems and to enhance the knowledge on the area of the study.

The research thus represents a hermeneutic, constructive case study, aiming at understanding of the phenomenon (change projects and facilitating constructs for them) and constructing an innovative, useful and theoretically grounded solution (the construct) for a relevant problem (there is a need for a novel practical constructs for project managers to facilitate and support planning and implementing change projects). However, apart from being an objective itself, the construct is also a means to an end, as the objective of the study was to generate knew knowledge. That is, first to check if it is possible to design a useful construct for project managers in carrying out change projects in the first place, and then, to describe the use, usability, usefulness, structure and contents of the construct[15]. In that sense, the study belongs to design sciences, has a normative flavour and follows the principles of technical norm.

In the construction phase of the study, I sought for a profound understanding of change projects, existing constructs for carrying out change, as well as critical success factors for carrying out change. In the testing phase, however, cases were mainly means for testing the construct and discovering area for improvement in it. In other words, cases were used for both building a theory and a construct and, thereafter, for testing it. A case study approach was particularly fruitful because “how” and “why” questions were important for solving the

[14] The line between action research and action science seems to be unclear and the concepts are referred to without a clear distinction. For this reason, I only use “action research” when referring to situations described and defined in Chapter 3.3.4.

[15] The research was also about evaluation of the construct. Both normative and summative evaluations were applied. (Patton 1990, 156, 160; Dave 1980, 476-477)

research problem. It was studied how the construct works in real life situations and why it works like that.

There were also many prominent characteristics of qualitative research in the research, such as semi-structured interviews, experiential understanding and multiple realities. This was thus mainly a qualitative research in terms of the data used. However, some quantitative methods were also used (see later in Chapter 4.2).

Despite the fact that the emphasis was many times placed on both scientific and company driven needs and I, as a researcher, did collaborate with people in the target system, this was not a typical action research as a whole. Some parts of the research and some cases fall into the category of action research but most of the parts and cases do not. As a summary, this research has an action research flavour to it, but by no means a label on it. For this reason, the criteria and theory of action research is not used for judging the results of the research.

Table 7 Summarises the research strategies most important for this research and thus acts as a basis for designing and conducting the research and later for evaluation of the research outcome.

Table 7 Characteristics of different research strategies

General characteristics	When to use?	Ensuring and judging the quality of the research
Qualitative research (Stake 1995, Gummesson 1993)		
• Case and field oriented • Issues are emic issues and progressively focused • Close to the real phenomenon • Researcher's personal involvement • The emphasis on observables, including the observations by informants • Includes descriptions with author's interpretations • Reporting provides vicarious experience • Knowledge is constructed, not discovered	• To understand a phenomenon, not to explain cause and effect relationships • Research questions are related with cases or phenomena	• Triangulation • Emergent and responsive research design • Sensitivity to the risks of human subjectivity • Disconfirming own interpretation
Constructive research and design science (Kasanen et al. 1991; Niiniluoto 1992)		
• Normative in nature • Typically includes case studies • Both quantitative and qualitative methods used • Produces an innovative and theoretically grounded solution for a relevant problem • Uses a limited number of research objects	• When there is a need for an innovative and theoretically grounded solution for a relevant problem • When there is a concern about "how things ought to be in order to attain goals" – not "how things are"	The research outcome: • Relevant, simple, and easy to use • Practical relevance • Practical utility • Proved to be useful • Theoretical novelty • Link to theory • Also applicable in other environments
Case study research (Eisenhardt 1989a; Ellram 1996; Gummesson 1993; Kasanen et al. 1991; Stake 1995; Yin 1984)		
• Descriptive or normative in nature • Both quantitative and qualitative methods used • Difficult to separate analysis and interpretation from data gathering • Analysing and interpreting subjective procedures • Knowledge rather constructed than discovered or found • Generalising on the basis of a very limited number of cases • Generalising is not making statistical inferences from the sample but to generalise through a deep understanding of the phenomena • Interviews adapt to the changing situations and requirements • Captures the core meaning and feelings of the informant	• When a contemporary phenomenon within its real-life context needs investigation • To gain a better understanding of complex phenomena such as change processes • When a "how" or "why" question is being asked about a set of events, over which the investigator has little or no control • To build a theory and to test it • To produce a description	• Use of triangulation • Proper research design • Rigorous and accurate representation of empirical data • Finding rival explanations • The reader is offered a chance independently to judge the merits, the validity, and the reliability of the analysis • Significant research outcome • Valid and reliable results

Based on the contents of Table 7, at least the following criteria are used to evaluate and discuss the quality of the research process and the outcome of the research. Further criteria and the quality of this study are discussed in Chapter 9. The criteria used in this study for evaluating the research are as follows:

- Link to existing theory and theoretical novelty of the construct
- Practical relevance of the construct
- Practical functionality of the construct (proved use, usability[16] – simple and easy to use – and usefulness)
- Applicability of the construct in other environments
- Rigour of the research process (the validity and reliability of the research)

[16] In the field of usability engineering, the concept of "usability" is a very rich and complex term containing several different characteristics (See e.g., Nielsen 1993, 26). As such, Nielsen's (1993, 26) definition was not appropriate for this research. In this study, "usability" stands for simplicity and easiness to use, perceived by experts and potential users of the construct. Usefulness, however, refers to the effects or benefits of the construct in change project planning and implementation.

4 RESEARCH DESIGN

In this chapter, the research design and the development process of the construct is presented. More precisely, the processes of both data collection and its refinement stand out clearly, as different phases of the process are described. The iterative nature of the development is described in order to give a full picture of the process as a whole. The main phases of the research comprise preunderstanding, constructing and testing. The objective is to offer the reader an overview on how I received the data needed for the research, from which sources and by which methods data was generated and, finally, how the interpretation of data was carried out.

"Research design is the logic that links data to be collected and the conclusions to be drawn to the initial questions of the study." (Yin 1984, 27) Yin further defines research design as an action plan for getting from here to there, where "here" refers to the initial set of research questions and "there" represents the set of conclusions or answers to these questions. Research design is not merely a work plan. On the contrary, the main purpose of it is more fundamental; that is, to ensure that the data and methods used are suitable for answering the questions.

Yin also mentions that another, maybe a slightly more practical and directly applicable, way to define research design is to think it as a blueprint of the research. Consequently, it deals with at least four problems of carrying out a successful research: what questions to study, what data are relevant, what data to collect, and how to analyse the results. (Yin 1984, 29) The following chapters elaborate different phases of the research from preunderstanding of the subject to writing the research report. Furthermore, guidelines for selecting, collecting and interpreting data are presented and discussed.

According to Ellram (1996, 94), when designing a study it is imperative to scrutinise the following questions:

- What are the research questions?[17]
- What is the data source?
- How appropriate and useful information from the data source is obtained?
- How information is analysed in order to enhance the validity?

One of the main purposes of elaborating the research design is thus to argue that rigorous methods – not just an ad hoc method – were used. However, Stake (1995, 19) also reminds that good research is not about good methods as much as it is about good thinking. That is, without truly understanding what you are doing and why, methods may be of very little use.

There are various ways to conduct a search and different authors representing a rich variety of schools and approaches emphasise their own views of the path to follow. Often, the phases of the research are related to the research strategy and the nature of the research. For instance, Kasanen et al. (1991, 306; see also French and Bell 1973, 84; Laakso 1997, 14) suggest that constructive research should contain six main phases, that is, (1) finding a relevant and interesting problem, (2) obtaining preunderstanding of the phenomenon, (3) constructing a model from previous knowledge, (4) attempting to solve a problem by testing the construct, (5) linking the construct to the existing theory and examining the novelty of the construct, and (6) discussing the applicability of the solution. Since this research is a constructive study

[17] The research questions were introduced in Chapter 3.1.

in which cases are used for both building the construct and testing it, it is natural to follow the guidelines of constructive and case study research (e.g., Gummesson 1993; Eisenhardt 1989a, 533). Thus, the phases of the study are as follows (Figure 8):

1. *Preunderstanding* of the phenomenon and the research object, and selecting a relevant and novel research problem (Chapter 5 and previously also Chapters 1 and 2)
2. *Constructing* the problem solution from previous knowledge, preliminary studies and practical experience on the probing version of the construct (Chapter 6 and partly Chapter 2)
3. *Testing* the problem solution (construct) through probing and expert opinions (Chapter 7)
4. *Validating and evaluating the research*. (Chapters 8 and 9)

The fourth phase of the research summarises the results of the testing phase by demonstrating the use, usability, usefulness, scientific and practical novelty of the construct, connecting it with existing theory, discussing the applicability of the construct in other environments and showing the rigour of the research process.

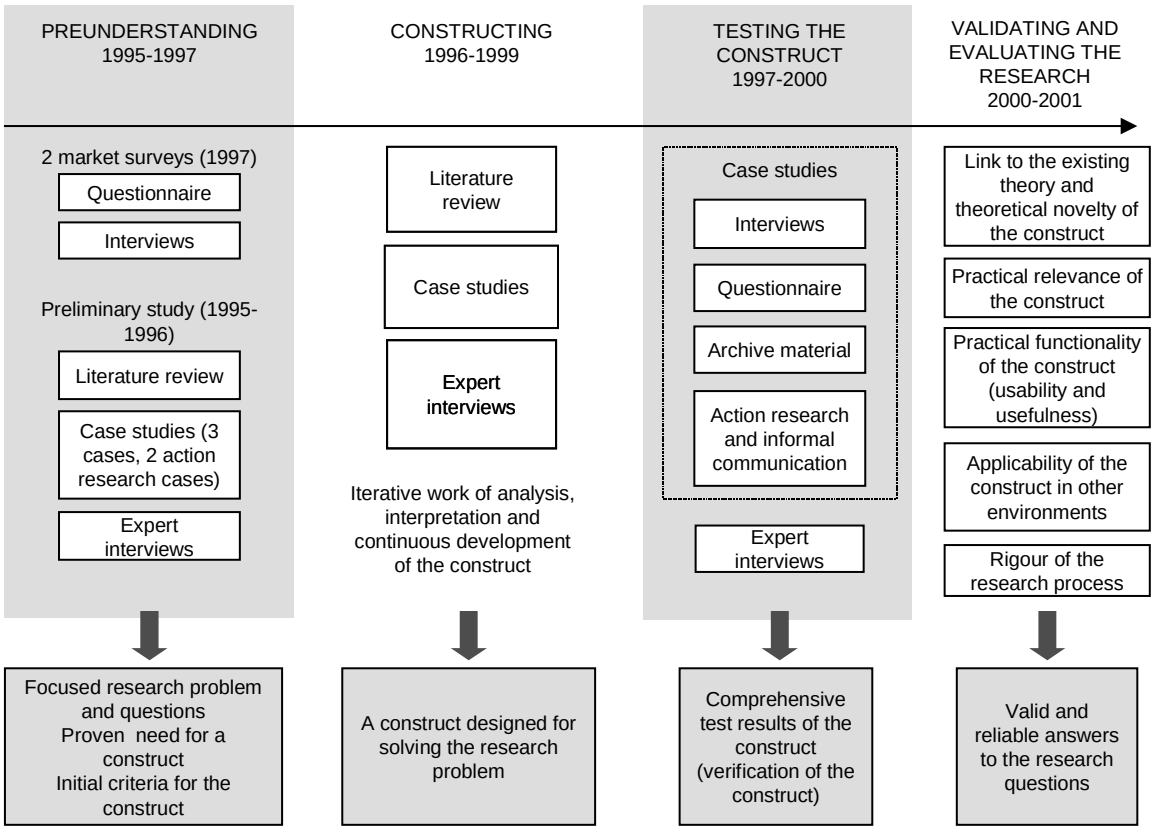

Figure 8 Phases of the research

The first phase consisted of exploring existing literature and carrying out case studies and market surveys. The second phase focused on building the framework and the first versions (01 and 02) of the construct and the last one, in turn, testing the applicability and usefulness of the construct version 03 and establishing improvement area for it. All phases included data gathering, analysis, interpretation and the drawing of conclusions. The following chapters provide the reader with a brief description of some potential research methods and methods used in different phases of the research.

4.1 Potential data sources and methods

Stake (1995, 56) suggests that, when selecting the data source, the main concern should be in understanding, i.e., which data sources will help understand the case best. In other words, when selecting cases for the study, the main criteria should not be to find cases representing best the entire population but to find those cases that can maximise learning. For this reason, purposeful sampling is used (Ellram 1996, 103; Gummesson 1993, 16). Purposeful sampling is generally used in case study and other qualitative research, as it provides an opportunity to focus on sites and samples (cases) that best support the accessibility to the type of phenomenon of interest. (Ellram 1996, 103) A collective case study, however, may pay some attention to representation of the totality, i.e., the entire population but, still, the representation will probably be difficult to defend. (Stake 1995, 5)

For case studies, it is not critical to accumulate all the data you can. Instead, the critical task is to get rid of most of the data you have gathered and only to focus on the most important ones. Most analytic time should thus be spent on the best data. (Stake 1995, 84) There is no universal answer to the question, how many cases should be included and studied in the research. It is more or less a matter of researcher's judgement in each specific situation. (Gummesson 1993, 9) However, the strategy of saturation is commonly applied, i.e., you keep adding cases into your study until new cases are of only marginal or no use in your study. Thus, further cases would not contribute to the development of understanding any more. (Gummesson 1993, 16)

In case studies, a considerable amount of the data is gathered informally beyond the formal occasions of data collection. Moreover, data is not gathered only during a certain period of time, but it is a continuous process starting before the actual commitment to the study. Stake (1995, 49-50) further claims that when planning a qualitative case research, much emphasis should be put on the experience of the researcher. By experience, he particularly refers to the ability to find and use the very sources of data leading to significant information and understanding of the phenomenon.

Stake states that the fieldwork should be guided by the initial research questions and a general data-gathering plan is an essence for useful and efficient data collection. Sometimes, it is even appropriate to design forms for each observation. However, Stake reminds that many times forms with exact categories and spaces for each item of information may not work in practice and thus will not be used systematically. They may be either incompatible with researchers' working styles or they just may draw the attention away too much from important phenomena outside the form. (Stake 1995, 50-51)

According to Yin (1984, 106), every investigation should contain a *general analytic strategy* yielding priorities of what should be analysed, why, and how. The purpose of a general analytic strategy is to ensure that evidence is treated fairly, compelling analytic conclusions are produced and alternative interpretations are considered. More explicitly, the general strategy helps a researcher to choose the most appropriate ones among different techniques and to take the analytic phase of the study into a successful conclusion. A general analytic strategy consists of at least the following three analytic techniques: pattern matching, explanation building, and time-series analysis. (Yin 1984, 105)

Pattern matching refers to the process of comparing empirical evidence (patterns) to predicted ones. Thus, in the event of matching results the internal validity of the findings is increased. (Yin 1984, 109; Stake 1995, 78) Stake claims that basically the search for meanings in a case study is a search for patterns and for consistency in corresponding situations. Stake uses the word "correspondence" when referring to consistency within

certain conditions. For instance, the success of change projects is related to the age of the project leader. These patterns can be searched simultaneously with reviewing documents, observing or interviewing (Stake 1995, 78).

According to Ellram (1996, 111), pattern matching is considered one of the best techniques in case study analysis. More precisely, the pattern matching focuses on how and why this particular outcome occurred in each case in the first place. Naturally, this analysis requires the development of explanations for the outcome. (Yin 1984, 110) An important characteristic in explanation building is that the final explanation is the result of iterative work: (Yin 1984, 114-115)

1. Making an initial theoretical statement or an initial proposition
2. Comparing the findings of an initial case against such a statement or proposition
3. Revising the statement or proposition
4. Comparing other details of the case against the revision
5. Again revising the statement or proposition
6. Comparing the revision to the facts of a second, third, or more cases, and
7. Repeating this process as many times as is needed.

It is the iterative nature of the process that differs explanation building from mere pattern-matching. In explanation building the final explanation is not fixed or fully stipulated at the beginning of the study but the very meaning of the process is to revise the tentative propositions – not to reinforce them with various cases. (Yin 1984, 115)

Similar to pattern-matching and an important aspect in explanation building is the development of plausible or rival explanations. In multiple-case studies, this approach results in cross-case analysis, not merely in analysis of each individual case. (Yin 1984, 115)

There are plenty of hidden dangers in explanation building, though. One of them is the risk of gradually being drifted away from the original topic of interest. Thus, constant reference to the original purpose of the inquiry and plausible alternative explanations is a necessity. Some other ways to overcome the problem is to use a case study protocol for defining what data is to be collected and why, to establish a case study data base, and finally to follow the chain of evidence. (Yin 1984, 115)

The purpose of time-series analysis is to detect trends and to trace changes over time in a certain phenomenon (Yin 1984, 115-116). This method was not used in the study.

According to Gummesson (1993, 12), a so-called fact is a combination of subjective values and raw data. What data you should define and promote to facts depends on your problem, intentions, creativity, time, money, concept, theories, and so forth (Gummesson 1993, 12). Yin (1984, 85) further notes that evidence for case studies may come from six sources[18]: documents, archival records, interviews, direct observations, participant-observations, and physical artefacts. Gummesson (1993, cf. Eisenhardt 1989a) introduces another set of methods for collecting data, that is, existing material, questionnaire surveys, qualitative interviews, observation, and action science. Table 8 summarises the strengths and

[18] Although Yin talks about “sources”, he actually refers both to methods for collecting data and the sources of information. Gummesson also means both data sources and methods to collect data by the word “method”. That is quite understandable, because in many occasions it is difficult and not even meaningful trying to distinguish these two elements from each other.

weaknesses of some data collection methods. That is followed by a more thorough discussion on the subject.

Table 8 Sources of evidence - strengths and weaknesses (modified from Yin 1994, 80)

Source of evidence	Strengths	Weaknesses
Documentation	• Stable – can be reviewed repeatedly • Unobstructive – not created as a result of the case study • Exact – contains exact names, references, and details of an event • Broad coverage – long span of time, many events, and many settings	• Retrievability – can be low • Biased selectivity, if collection is incomplete • Reporting bias – reflects (unknown) bias of author • Access – may be deliberately blocked
Interviews (and questionnaires)	• Targeted – focused directly on case study topic • Insightful – provides perceived causal inferences	• Bias due to poorly constructed questions • Response bias • Inaccuracies due to poor recall • reflexivity – interviewee gives what interviewer wants to hear
Observation	• Reality – covers events in real time • Contextual – covers context of events • Insightful into interpersonal behaviour and motives (in participant observation)	• Time-consuming • Selectivity – unless broad coverage • Reflexivity – event may proceed differently because it is being observed • Cost – hours needed by human observers • Bias due to investigator's manipulation of events (in participant observation)

4.1.1 Documentation

Documentation is helpful in assuring small details, such as spelling, names of places and titles of organisation, to be correct. Further, they can provide details to corroborate information from other sources, e.g., interviews (Yin 1984, 85-87; Stake 1995, 68). However, naturally also inferences can be made from documents, yet they should be merely tentative in nature and regarded as clues worthy of further investigation. Documents should always be viewed critically, because they do not always present and contain the absolute truth about the subject concerned, yet an investigator is easily prone to think like it. (Yin 1984, 85-87)

4.1.2 Interviews and questionnaires

In case studies, interviews are one of the most important sources of evidence because case studies usually deal with human affairs and interaction (Yin 1984, 88-91). Moreover, interviews serve the purpose of obtaining multiple realities of one single case. However, they may also serve as useful means for receiving interpretations from different players in the case. (Stake 1995, 64)

Most commonly interviews in case studies are open-ended, i.e., the investigator may ask the interviewee questions both about the facts of the matter and also about interviewee's opinions about events. Attention is also paid to body language, gestures and other non-verbal signs. (Gummesson 1993, 33; Yin 1984, 88-91) Yet, the investigator needs to be careful not to

become too dependent on the key informant, because at the same time informant bias may increase. A reliable tactic in avoiding this pitfall is to use multiple sources of data in reinforcing the information from interviews. (Yin 1984, 88-91)

The changing and evolving nature of interviews distinguishes it from quantitative surveys. It is expected that each interviewee has a unique story to tell and in order to capture it, interviews need to be adapted to the changing situations and requirements. Furthermore, the objective is not merely to receive yes or no answers to precise questions but to obtain a description of an episode and explanations for activities and actions. Capturing the core meaning and feelings of the informant is thus a considerable challenge for a researcher. (Stake 1995, 65)

Although questionnaires are traditionally associated with quantitative methodology, they can also be supportive to qualitative methods and case studies. Questionnaires have some indisputable advantages; they can clearly produce answers to questions such as how much, how many, and how often. (Gummesson 1993, 29)

4.1.3 Observations

Direct observations may serve yet another source of information in case studies. Crucial for observations is to bear in mind the issues of the research and to continuously direct observations towards them. Again, the researcher has to keep a good record of the events observed for further analysis and reporting of the case. These records may be either quantitative or qualitative in nature. In either case, however, observations and record keeping must be carefully planned and in line with the issues under study. (Stake 1995, 62; Yin 1984, 91)

Most formally, even observation protocols may be developed offering guidelines for measuring e.g., incidence of certain types of behaviour in the case study site. Somewhat less formal observations contain for instance secondary remarks about the climate of personnel, condition of the building or the furnishings of the informant's office. Informal observations may offer some clues to elements that are more fundamental and distinguishing features of the organisation concerned. Furthermore, they may be invaluable aids to further understanding the holistic nature of the phenomenon. Again, to increase the reliability of the evidence, a common procedure is to have several observers. (Yin 1984, 91)

Participant-observation is a special mode of direct observation, with the distinction that the investigator is not merely an outside observer but also an active player in the case study situations. In other words, the investigator may participate in the events being studied. This naturally provides some unique opportunities for collecting case study data, because participation may sometimes be the only way to have direct access to the phenomenon under investigation. On the other hand, some drawbacks are also connected with participant-observations. Basically, the investigator has less time and resources to work as an observer when participating in the event. Thus, less time is left for taking notes or to raising questions regarding the events underway. (Yin 1984, 92-93)

4.2 Data sources and methods used in different phases of the research

There may be a certain moment of the research when more emphasis is given to analysing the data. However, in case studies it is difficult to separate analysis and interpretation from data gathering, since analysis should be a continuous effort starting from the very beginning of the research. (Eisenhardt 1989a, 533; Stake 1995, 71-72) Stake emphasises the role of interpretation and fairly subjective procedures in analysing and interpreting. He also

addresses the importance of continuously asking questions, suspecting and being sceptical about the initial interpretations and assertions. (Stake 1995, 78)

The data sources and methods varied over the research process. In the preunderstanding phase, the main units of analysis were expert/consultant interviews and three change projects in two different companies. In the constructing phase fourteen expert and two users of construct version 02 formed the most important data sources. However, the primary units of analysis in the research were twelve cases studied in the testing phase and sixteen experts giving feedback on the construct version 03.

4.2.1 Preunderstanding

"Preunderstanding is the researcher's knowledge, insights and experience before[19] engaging in a research project". (Gummesson 1991, 50) Yin (1984, 37) also notes that in order to avoid some common flaws of theory development, it is useful to prepare oneself for the study by having a comprehensive view of the existing literature related to the subject in concern. Susman and Evered (1978, 595) refer to the hermeneutical circle when suggesting that no knowledge is possible without some kind of presupposition, i.e., some foreknowledge of the whole is needed for initiating and conducting good research.

I obtained the preunderstanding through a preliminary study that was conducted in 1995-1996. The results of the study also act as a preliminary framework for the construct and are briefly summarised in Chapter 5.1. A more thorough description of the study and its results can be found in: Helsinki University of Technology, Industrial Economics and Work Psychology, Report No 165 (Lanning, 1996, in Finnish).

The main data sources and data collection methods in the preliminary study were literature reviews, case studies and expert interviews. The phases of the preliminary study are presented in Table 9.

Table 9 Phases of the preliminary study

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
• Literature review • Expert interviews	• Designing interview guidelines for cases • Initial framework for dealing with problems	• Case interviews • Incremental development of the interview guideline • Gathering problems, causes, and solutions for problems along with examples • Further expert interviews	• Building a framework for dealing with problems in change projects • Categorising problems and their causes • Placing examples and other interview data in the framework	• A framework for avoiding problems and achieving goals in change projects

[19] As preunderstanding is the knowledge one possesses before engaging the research project, some of the material presented in Chapters 1, 2 and 5 is actually not part of preunderstanding but rather elaboration or understanding of the research or even designing the construct. The line between preunderstanding and understanding is, however, difficult and even pointless to draw, as the process of understanding more is incremental. The question in this case was, when the research project starts and when researchers are only looking for relevant problems. For me, one of the questions in the preunderstanding phase was if it was meaningful to start designing a novel construct for change project management in the first place. I needed to know if there was a need for a new construct before proceeding with the research. However, when I confirmed the need and was thus able to take the next step away from preunderstanding, I was already able to answer the first research question. In other words, I was already engaged in the research project although I was still in the preunderstanding phase.

In the first phase, along with a literature review, an open-ended interview was carried out for 17 researchers and consultants, all having some experience of change management. The case study interview guideline for phase 3 and the first draft of the framework was outlined according to the expert interview results and the literature review (see case interview guideline in Appendix 2). People from three different projects were interviewed. Interviewed cases included two change projects in production and one in an office environment. At the time of the interview, all projects had just been concluded. In two of the projects, I had an active role as an outside expert. I took part both in the planning and the implementation phase of development. In those projects I also had access to project documentation and carried out several discussions with the project manager and other members of the project team.

One case company in the preliminary study designed and produced tailor-made labels and stickers. Thus, delivery speed and accuracy were one of the most important factors causing competitive advantage. However, the company had serious problems in these areas and decided to launch an extensive development program for tackling the problems. The program was divided into two separate projects, one comprising the office tasks and the other production. These two projects were my action research cases in the preliminary study.

The other case company was a factory assembling elevators. It had similar problems to the other case company and thus had launched a change project with objectives such as simplifying processes, job enrichment, improving delivery accuracy and shortening lead times in production and assembly. In both case companies, functional based operations were shifted towards the principles of team work and process organisations.

Project managers, workers, clerks, consultants, line managers and supervisors having participated in the projects were interviewed (Table 10). Informants were chosen to represent a wide array of roles in the project and organisation and different attitudes towards the change effort. Both, people amenable to changes and opposing them were included in the interviews.

Table 10 Research data and methods used in the preliminary study

Case code	Field of industry	Project definition	inter-views	Interviewees	Interview information	Other data and methods
A2	Printing	Improving order to delivery processes in production (printing)	5	Project Manager (supervisor) Project team leader Shop floor worker Shop floor worker Consultant	Face-to-face Tape recorded and categorised	Action research Project documentation Regular discussions with project members
A2	Printing	Improving order to delivery processes in the office	5	Project Manager (line manager) Office worker Office worker Office worker Consultant	Face-to-face Tape recorded and categorised	Action research Project documentation Regular discussions with project members
A3	Metal	Simplifying processes, job enrichment, improving delivery accuracy and shortening lead times in production and assembly	6	Project Manager Supervisor Shop floor worker Shop floor worker Shop floor worker Consultant	Face-to-face Tape recorded and categorised	Project documentation
Researcher and consultant interviews			17	Researchers and consultants	Face-to-face	-

Another source of preunderstanding was two independent marked surveys (survey A and survey B) carried out by our research team[20] among Finnish industry and consultants in 1997. The objectives of the surveys were to map the need for a new construct in the market and to distinguish the features most important for the potential users. See the results in Chapter 5.2.

The main data sources and data collection methods in market survey A were interviews and questionnaires for change project managers. Market survey A focused on exploring the markets for a change project management tool in the form of a CD-ROM or multimedia form. The questions of the survey were as follows:

- Is there a competing product already on the market?
- Is there a market for a new construct?
- What should the characteristics of the construct be?

The first two questions were if there was a competing product already on the market and if there was a need for a new construct facilitating change project implementation. The question was explored by browsing Internet[21] pages by relevant entries and by asking informants' opinions regarding the matter.

One of the main criteria for choosing the companies for the survey was the representation of the entire population; that is, Finnish small, medium size and large companies. The companies represented different fields of service and industry, they were located in different parts of Finland and were also of different size. Nine companies out of 45 were located in the Helsinki district and half of them had operations in other places in Finland. Other

[20] Our research team and my role in the research becomes explicit in Chapter 4.3.
[21] The entries used for browsing are not available.

characteristics of the sample are summarised in Table 11. Companies and informants were chosen both from a telephone directory and from a list our research team had gathered of change management people.

Table 11 Summary of survey sample in market survey A

Size (employees)	Number of companies (and informants)	Field	Number of companies (and informants)
< 50	9	Service	19
50-200	11	Industry	18
200-1000	9	Public sector	5
> 1000	16	Others	3
Σ	**45**	**Σ**	**45**

An interview guideline and a questionnaire (Appendix 3 and Appendix 4) were designed for defining answers to the research questions. Informants who took part in the research answered the questionnaire and went through a short interview. All informants were relatively experienced change project managers, 32 were at the time of the survey responsible for at least one change project and 42 participated in some project as a project member. For only one respondent, change projects were not among the most significant preoccupations at the time of the research. Twenty-seven out of 45 had a university degree. Informants could choose from face-to-face and telephone interview. Seven interviews were carried out face-to-face and others by telephone.

Market survey B explored the market potential for a new product and the characteristics that would be useful according to potential users. The survey was thus not limited to an electronic version of the product but also covered a potential paper version. These two surveys were overlapping to some extent, which gave a chance of finding corroborating evidence, and of improving the quality of the surveys and their outcome. The research questions in market survey B were as follows:

- What is the need for a new artefact facilitating change project planning and implementation?
- What are the characteristics potential users would appreciate in the product?
- What would make the product tempting and useful?

The survey sample consisted of organisations both from industrial and service sectors. As well as survey A, survey B covered organisations of all sizes. Companies were randomly chosen from the following sources: (1) Management Consultants in Finland 1997, (2) Consultant Database of the SME Foundation, (3) Helsinki Area Company Telephone Book, (4) Kauppalehti (the largest Finnish daily business and financial newspaper) from 1.11.97 – 5.1.98, (5) Yritystele Internet pages[22] and a list of people from our research team.

The research was conducted in two consecutive phases. The first phase covered a questionnaire (Appendix 5) which was sent to 55 consulting and to 185 other companies. The response rate was 20%. The questionnaire was attached with an introductory letter and information regarding plans on the preliminary construct. At the end of the questionnaire, there was also a question whether the informant was willing to give an interview by telephone to discuss further some issues in the questionnaire. Representatives from seven

[22] www.yritystele.fi, Oy Visual Systems Ltd. 1997, 2.1-5.1.1998

industrial and three consulting companies were willing to give an interview. The summary of survey sample is presented in Table 12.

Table 12 Summary of survey sample in market survey B

Size (employees)	Number of companies	Field	Questionnaire	Interview
1-5 (consulting)	7	Service	11	7
5-20	1	Industry	30	
20-100	6	Consulting	8	3
100-500	9	**Σ**	**49**	**10**
Over 500	26			
Σ	**49**			

The third source of preunderstanding were discussions with colleagues in Helsinki University of Technology along with information and experience gathered by action research from various organisational development projects in Finnish industry beginning in 1995. The contents and the results of the preunderstanding is described thoroughly in Chapter 5.

4.2.2 Constructing

Based on the preunderstanding and a more comprehensive literature review, the development of the first version of the construct began in the winter of 1996/1997. Some of the construction work was thus started already before the final market survey results. The construction process was iterative and the perceptions regarding the objectives, the contents and the structure of the construct varied and developed over time. There are three different versions of the construct. The first one was developed for only one company and, furthermore, was not thoroughly tested. For this reason, this thesis only concentrates on two latest versions which are labelled version 02 and version 03[23]. Figure 9 summarises the main research material used for developing different versions of the construct. Research team members' field experiences (most of them not reported here) and literature were continuously used for improving the construct. Version 03 is thoroughly described in Chapter 7.1. The contents of the construction phase are described thoroughly in Chapter 6.

[23] The first commercialised version of the construct was launched in the fall of 2000. That is not reported here as I already had enough material for validating and evaluating the research. Other reasons for not including the commercialised version were limited time and resources.

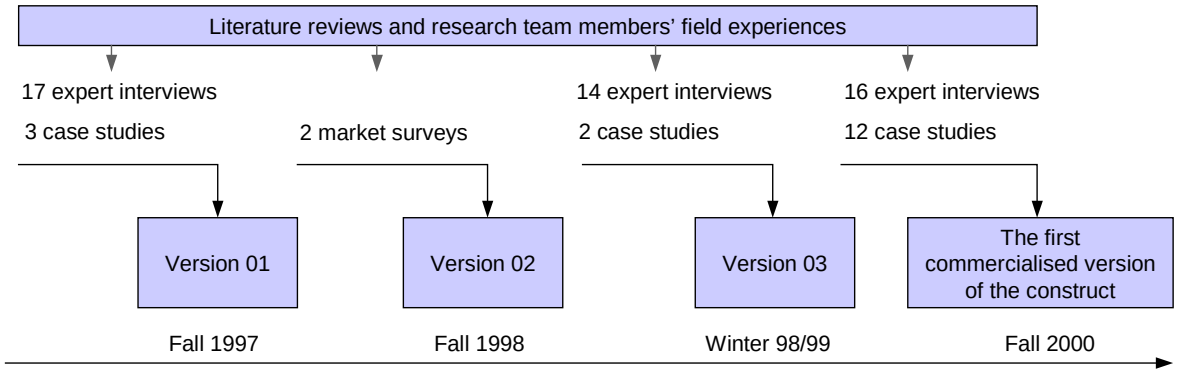

Figure 9 Main material used for developing different versions of the construct

In the constructing phase, some general principles and work methods were applied to ensure valid and reliable research results and the effectiveness of the product development and, finally the usefulness of the construct. The principles and work methods were as follows:

- The basis of the construct was built on preliminary study results, on market surveys, on experiences on the field (cases) and on an extensive literature review. The elements and modules in the construct were selected from the above mentioned sources. However, some conjecturing (Susman and Evered 1978, 596) was also applied.
- A structured method for breaking down all gathered information into tasks, tools, and methods was applied.
- Regular project team meetings were held to discuss the structure and the contents of the construct. Regular follow up meetings (short ones twice per month, comprehensive ones a few times per year) were also held.
- Both, informal and formal comments from the users of the construct were received and discussed. Ideas regarding the construct were presented at international conferences (Appendix 6).
- Emerging ideas concerning the construct were gathered in one file. However, the file was not in regular use.
- The product development was unavoidably an iterative process and thus our research team was careful about etching decisions in stone once they were made.[24]

The most important data collection method in the constructing phase was face-to-face interviews (see interview guideline in Appendix 7). Comments on the construct version 02 were gathered from fourteen (14) experts and two (2) users. Experts were management consultants, researchers and line managers who had experience of change projects. Experts were chosen by me and a team colleague and the criteria used was our personal networks. Users were chosen from the company our research team had closest co-operation with at that time. More emphasis was not put on choosing the experts and users since the schedule was

[24] Despite the strong practical background, it was clear from the outset that the first version of the construct was only a preliminary prototype needing a lot of testing and field work before it could reach a final form general enough to be applicable in different organisational contexts, yet concrete enough to be useful with only minor adaptation by the project manager. Eisenhardt (1989, 536) also suggests that although an early identification of possible constructs is useful, it is still important to notify that they are supposed only to be tentative. This iterative nature of case studies meant in practice that both the structure and the contents of the construct evolved all the time during the research process.

tight and I was quite sure that in that phase of the research, we would be able to collect valuable enough feedback from that group of people. Furthermore, a lot of information and comments were also received by informal methods such as discussions with users and observations in case companies.

A summary of experts and users, who commented on construct version 02 in an interview is provided in Table 13. All informants were coded by a letter and a number. For instance, E1 refers to expert number one and C2 to a user from organisation C.

Table 13 Experts and users commenting the construct version 02

Code	Field of industry	Title	Interview date
E1	Consulting and training	Consultant/trainer	11/27/98
E2	Consulting	Consultant (VP)	11/29/98
E3	Consulting	Consultant	11/26/98
E4	Consulting	Consultant	01/26/99
E5	Consulting and training	Project manager	02/05/99
E6	Consulting and training	Trainer	03/29/99, 02/10/99
E7	Telecommunication	Consultant	02/05/99
E8	University	Researcher	01/18/99
E9	University	Professor	02/01/99
E10	Consulting	Project manager	02/22/99
E11	Consulting and training	Trainer	02/02/99
E12	Project consulting	Consultant	02/04/99
E13	Project consulting	Consultant	02/03/99
E14	Project consulting	Consultant	02/03/99
G1	Metal/Sheet metal parts	CEO	01/29/99
G2	Metal/Sheet metal parts	Production manager	06/29/99

Informants gave comments on both the perceived usefulness and the usability of the construct. User interviews handled five main topics: general experience and perceptions, the amount of the use, contents, usability and usefulness. The five main topics were decomposed to explanatory, more detailed questions that were used to provoke further discussion if needed.

4.2.3 Testing

In the testing phase, the main data sources and data collection methods were sixteen expert interviews and twelve case studies consisting of interviews, questionnaires, archives and observations. The testing of the construct was carried out hand in hand with its construction. In reality, it is thus difficult to distinguish between constructing and testing phases - the entire process of construction was about testing, refining, testing again and refining again. In other words, both normative and summative evaluation (Patton 1990, 156, 160; Dave 1980, 476-477) was applied. The test results are described thoroughly in Chapter 7.

The criteria for choosing the cases[25] for testing the construct were of four different kinds. First, I wanted to test the construct in many different kinds of surroundings, that is, in large and small organisations, in different fields of industries and different kinds of change projects. The idea was, however, not to enable more reliable generalisation but, rather, to provide more a thorough understanding of the construct, its use and practical functionality in different user environments. Another criteria that I used concerned the change project itself. It was important to test the construct in projects it was originally designed for. That is, organisational change projects – not e.g., investment or construction projects. The third criterion was more practical by nature. In order to learn from the cases, the commitment of the client organisations was crucial, as only that way it was possible to capture the usability, usefulness and improvement potential of the construct. The last criterion was also more practical. The time and resources available restricted the selection of client organisations and thus case companies for this study. The case information is summarised in Table 14. A more detailed within case analysis is provided in Appendix 10.

[25] The construct alone is not a case in this research as the objective of the research was not to understand the construct separated from its context. The objective was, however, to understand the construct and its use together with the user and the environment it is used in. A "case" in this research is thus a combination of a user, the way he or she uses the construct, the functionality of it in a change project and the surrounding environment. In this way, there were altogether twelve (12) different cases in the testing phase of the study.

Table 14 Summarised case information and the sources of data (AR stands for action research methods)

Case code	Title	Field of industry	Unit size and turnover	Project definition	Inter-view	Ques-tion-naire	Ar-chives	Other sources and methods
B2	Project Manager	Medical	300 persons 950 MFIM	Developing and implementing new procedures for information collection in production (5/99-2/01)	06/99 06/00 09/00	yes	yes	Several telephone discussions
B4	Project Manager, Department Manager	Medical	100 persons	Developing teams in the order to delivery process **(**9/98-N/A[26])	09/00	yes	yes	-
C1	Human Relations Manager	Metal/ Metal springs	80 persons 58 MFIM	Developing a system for setting personal development goals and monitoring the progress (9/98-12/99)	05/99	yes	yes	Several face-to-face discussions, monitoring the use of the construct
C2	Quality Manager	Metal/ Metal springs	80 persons 58 MFIM	Designing and implementing a new training and competence strategy (12/98 – 12/99)	05/99	yes	yes	Some face-to-face discussions, monitoring the use of the construct
C3	Product Manager	Metal/ Metal springs	80 persons 58 MFIM	Developing new procedures for improving work environment (4/98-12/99)	05/99	yes	yes	-
D1	Chairman of the Board	Metal	200 persons 120 MFIM	Co-ordinating a development program consisting of 26 projects	05/99 08/00	yes	yes	AR and several face-to-face discussions
F1	CEO, Managing Director	Metal/ Metal compo-nents	65 persons 36 MFIM	Creating new vision and communication practices (2/98-11/99)	06/99	yes	yes	-
G1	Managing Director	Metal/ Sheet metal parts	13 persons 12 MFIM	Redesigning and implementing tool design and procurement processes (9/98 – 7/99)	06/99	yes	yes	AR and several face-to-face discussions, monitoring the use of the construct
G2	Production Manager	Metal/ Sheet metal parts	13 persons 12 MFIM	Redesigning and implementing tool design and procurement processes (9/98 – 7/99)	06/99	yes	yes	AR and some face-to-face discussions, monitoring the use of the construct
H1	Quality Manager	Con-sumer goods	50 person 220 MFIM	Redesigning and implementing a new, process based organisation (3/98-on-going)	05/99 09/00	yes	yes	AR and several discussions, monitoring the use of the construct, participating in the project
H2	Human Relations Manager	Con-sumer goods	50 persons 220 MFIM	Improving job satisfaction and motivation (6/98-12/98)	05/99	yes	yes	AR and several discussions, monitoring the use of the construct, participating in the project
I1	Develop-ment Manager	Logistics service	1000 persons 400 MFIM	Improving the logistics of one product family (4/2000-12/2000)	06/99 12/00	yes	yes	-

[26] N/A means that the information was either not available or not applicable.

Organisations and project managers for testing and commenting the construct represented various kinds of projects and organisations. As the construct was planned to be a generic tool for change project implementation at an operative level, it was important to receive feedback from different kinds of settings and surroundings. The process of conducting the case analysis and receiving comments from the users was as follows:

- Case companies and projects were chosen to represent different kinds of settings
- Training on the use of the construct was arranged in the case companies
- 12 project managers in seven different organisations were the actual users of the construct
- All users were interviewed face-to-face
    - Interviews were carried out at the informant's working environment and lasted from 45 minutes to 2 hours.
    - Interviews were tape recorded and transcribed
    - Interview data from the first interview circuit was coded, categorised and analysed using ATLASti 4.1 for Windows 95 software
    - In order to capture the core message of the data, the categorised interview text was read through several times.
- All users were given a questionnaire form; all filled in and replied to the form
- Within case descriptions of all twelve cases were written
- Cross case analysis was carried out
- The process of collecting data, analysing it and making inferences followed the principles of sound research design

In addition to users, also some experts, i.e., experienced project managers and consultants gave comments on the construct. That is, sixteen experts went through the material in the construct and in an interview reflected it against their own experiences on change projects. The expert information is summarised in Table 15.

Table 15 Experts commenting the construct version 03

Informant code	Field of industry	Title	Interview date
E10	Consulting	Project manager	02/99
E11	Training and consulting	Trainer	02/99
E12	Consulting	Consultant	04/99
E13	Consulting	Consultant	03/99
E14	Consulting	Consultant	03/99
E15	Training and consulting	Trainer	03/99
E16	Consulting	Project manager	03/99
E17	Consulting	Managing director	02/99, 07/99
E18	Consulting	Consultant	07/99
E19	Consulting and training	Project manager	03/99, 05/99
E20	Process automation	Sales service manager	03/99
E21	Electronics	Quality manager	03/99
E22	Consulting	Consultant	03/99
E23	Electronics	Production manager	04/99
E24	Consulting	Consultant	03/99
E25	Medical	Development manager	07/99

Documents were actively used in the testing phase of the study. Project descriptions, plans and assessments along with other archive material were used to find corroborating or contradicting evidence and to ensure that minor details about the projects are correct.

Interviews were semi-structured and open-ended. The interview structure allowed an open format but, when needed, guided the interviewee through the questions and moved to the next questions only when satisfied with the coverage of different viewpoints.

Questionnaires were given to all project managers representing cases in testing construct version 03. In one company, a questionnaire was also given to a project team member (G2) and in another company to a project steering committee member (I1) since they had an active role in the project planning and implementation. The questionnaire included both multiple-choice quantitative and open-ended qualitative questions (Appendix 8).

Observations were applied to some extend but they were not carried out as systematically as suggested in the literature. For this reason, I have not emphasised the role of action research and direct observations as means for collecting data. However, as some of the cases were carried out in our client organisations and I had a role in the execution, observations did unavoidably play some role in this study, too. Unstructured notes regarding the cases were written down whenever considered important and several unofficial discussions were carried out with representatives in the client organisation.

A software called ATLASti 4.1 for Windows 95[27] was used for organising and analysing the data in the testing phase. All interview data were organised, coded and categorised using ATLASti. The use of the program facilitated the execution of analysis and interpretation. The process proceeded in the below described phases.

[27] For more information about the ATLAS software, see the internet-address: http://www.atlasti.de

Organising the data. I started the analysis process by reading through the interview material several times. At the same time, I already made some written remarks and comments. However, the main purpose was to capture the complete picture and to study the interview material as a whole. Then, I started forming hermeneutic units[28] from the material and placed it in the ATLASti software. Hermeneutic units were named as described below.

a = hermeneutic unit a, expert interviews concerning construct version 03

b = hermeneutic unit b, project manager interviews concerning construct version 03

Analysing the data. The next step was to start scrutinising the actual contents of the interview data. That is, I divided the data into pieces, i.e., categories that could easily be analysed further. I started the process by using the interview outlines and emerging, new ideas for naming and defining the codes by which the data would be further classified. For instance, one thing I wanted to check was the use of the construct, i.e., how much and which parts of the construct the informant had used in practice. I thus searched for all the answers that were related with the above mentioned question and marked them with the code "USE". At this point, the software also gave me a chance to identify all relevant quotations. The names and definitions of codes I used are described in Table 16.

[28] The dominant data entity in the ATLASti software is called a hermeneutic unit. Different hermeneutic units are formed based on the research interest, i.e. which entities the researcher wishes to be examined separately. In my case, e.g., different hermeneutic units were formed for different informant groups (users and experts). For instance, all expert interviews concerning the CEG version 03 were labelled as hermeneutic unit a.

Table 16 Codes and their definitions used in the data analysis by ATLAS software

Name of the code	Definition
Compare	Comparison of different versions of the construct.
Futureplans	Future plans for the use of the construct.
Info	All comments on construct's contents.
Infocsf	General comments on information that is critical in carrying out change projects.
Infogood	Positive opinions about a specific content, i.e., piece of information in the construct. For instance, "motivation was good".
Infomiss	Comments on information the construct does not contain but the informant would add into the construct.
Infovain	Information, which the informant would exclude from the construct.
Language	Comments on terms and language used in the construct.
Layout	Comments on the layout and colours.
Others	Other interesting comments.
Paper	Opinions regarding paper and electronic versions of the construct.
Products	Comments on other products similar to the construct. The novelty of the construct.
Purpose	For what purpose was the construct used? Other potential purposes for the use of construct?
Q	An unclear comment.
Structure	All comments on the structure and modules included in the construct.
Structurestr	Positive comments and perceived strengths on the structure and different modules in the construct.
Structure-weak	Negative comments, weaknesses or development ideas on the structure and different modules in the construct.
Support	Opinions regarding the user support.
Training	Opinions regarding the training on the use of the construct.
Usability	Comments on how the construct is to use in practice. General opinions regarding the user friendliness and usability.
Use	What parts of the construct were used? It must be specifically said that some part has been used.
Usefulness	Construct's perceived usefulness and influence on decision making and action. Opinions regarding the potential effects of the construct. How did construct meet the user's expectations?
User	Perceptions on who could be a potential user of the construct.
Why	Factors that have either furthered or hindered the use of the construct.

Coding and classification was followed by grouping the coded material into suitable categories for discovering patterns and making interpretation of the data easier. I more or less formed the categories around my research questions and main interview themes and printed out reports focused on these issues. However, I tried to keep my work as inductive as possible by keeping my eyes and mind open for new issues emerging from the material. Consequently, I had all interview material organised both by the informants and by the questions I needed an answer to. The material from open-ended questions in the questionnaire was later placed into the right categories in the report. This was followed by cross case analysis, pattern matching and finding out explanations. The results are described in Chapter 7.

4.3 Researcher's role and access to reality

I have several times referred to our research team when describing actions and procedures in developing the construct. In this chapter, I clarify the composition of our research team and my role in different phases of the research process and my access to data relevant to the research problem (e.g., Gummesson 1991, 21).

Our research team consisted of three to seven people depending on the phase of the research programme. Two of us (myself and a team colleague) were responsible for designing the basic structure of the construct and, in addition to us, another two people actively took part in the process of building the construct. The remaining three people tested the functionality and took care of some technological issues and the fine-tuning of the construct. I wish to state that developing the construct was a team effort and each member of the research team had a certain role and defined responsibilities. Figure 10 summarises my main responsibilities in the research.

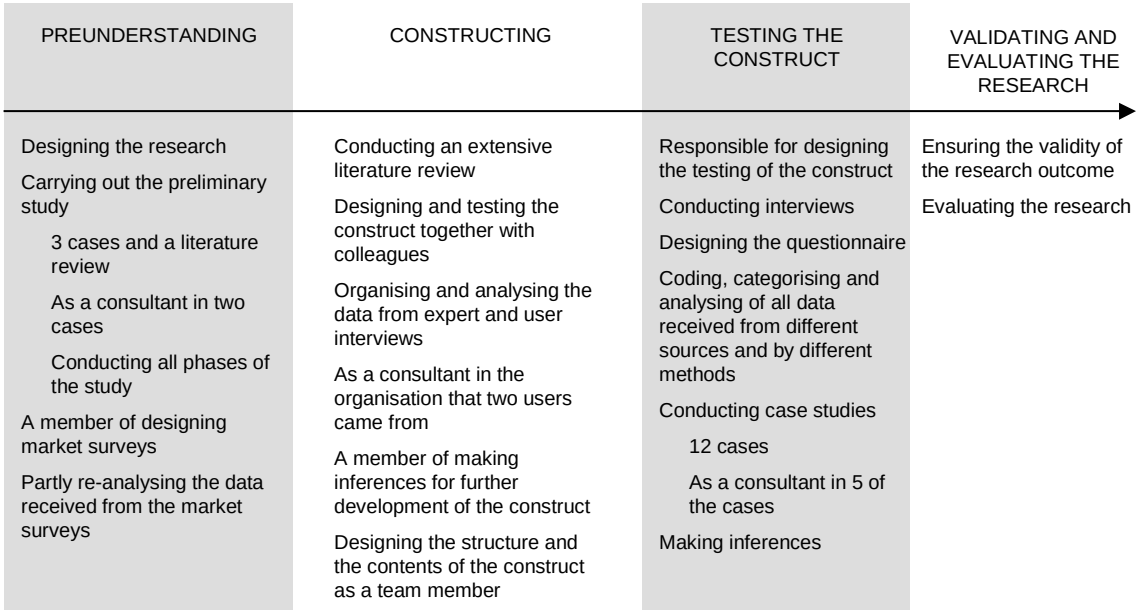

Figure 10 My role in the case studies and different phases of the research

In the preunderstanding -phase, I conducted the preliminary study from designing the study to analysis and interpretation of the data. As earlier mentioned, both market surveys were conducted as part of course Tu-91-109, Seminar on Marketing Research 1997/1998 at Helsinki University of Technology. Surveys were designed by me together with our research team and conducted by two separate groups of students from the above-mentioned course. Both groups wrote a report of the findings. However, later I had an opportunity to study the survey data and thus to draw my own conclusions and make my own interpretations on the material. Most of the hard work in the market surveys was, however, carried out by the students.

Designing the construct was a joint effort of our entire research team. As the construct is based on critical success factors on change projects and I had already studied the subject in the preliminary study, I had an active role in designing and planning the contents and the structure of the construct. I was responsible with a team colleague for deriving practical methods and concrete actions from critical success factors and forming the structure for the construct. I was also responsible for and carried out the production of construct version 01. In the construction phase, I had access to valuable data as I acted as consultant in the organisation, which was using construct version 02. I was thus able to meet the users of the construct and to create good relationships with them. A team colleague carried out interviews in the constructing phase and I had regular discussions with her about the feedback from the interviewees.

The same researcher, who had carried out interviews in the previous phase, was also responsible for doing it in the testing phase. She carried out sixteen expert interviews and twelve user interviews as part of the case studies. I also interviewed five users in case companies in order to clarify some unclear issues. All the rest of the testing, i.e., designing, conducting the work, analysing and interpreting the material of questionnaires, archive material and case studies was carried out by me. However, I had invaluable support from the entire research team in the form of critical discussions, finding patterns and rival explanations.

I had a close and warm relationship with most of the case companies and even had a role as an outside consultant in five case companies (see the description of my role in the cases in Appendix 10). For this reason, I was able to have a close look at the use of the construct and at the change projects that were going on in the organisations. I carried out several informal discussions on the use and usability of the construct and thus steadily received valuable information about the construct.

4.4 Reporting the findings

In my reporting, the objective is to enhance the reader's ability to gain experimental understanding of the case and the research process in general. (Stake 1995, 39-40) I intend to gain better credibility for the research by making the research process explicit and transparent, so that readers could have a chance to judge the appropriateness and soundness of the methodology used (Ellram 1996, 114). Further, the purpose of rich description and quotations is to offer readers an opportunity to draw their own conclusions based on the material (Gummesson 1993, 35).

All data are arranged thematically or chronologically instead of arranging it according to the data source or collection method. That is, e.g., in the testing phase, data is reported and discussed by themes around the research problem combining information from different sources of evidence and methods of collection. Almost all direct quotations are marked by a code consisting of tree different elements: user/version/method. For instance, B2/03/I means that informant B2 (B representing the organisation) said the sentence in an interview concerning construct version 03. In case it is obvious, which version of the construct the quotation refers to, the version number may have been omitted from the code. The criteria for choosing direct quotations were the following. First, the quotation should add value to the report by being informative and, second, they should represent the different views of the respondents.

4.5 Summary of the research design

Table 17 clarifies the research design of the thesis. That is, a summary of empirical data and research methods used in different phases of the research are presented here.

Table 17 Summary of empirical data and research methods used in different phases of the research (I=interview, Q=questionnaire, AR=action research methods)

Phase of study	Interviewee's role	N (I)	Communi-cation channel		N (Q)	Ar-chives	AR	Other data and methods
Preunder-standing	Case A1	5	Face-to-face	Tape recorded	-	yes	yes	Regular discussions with project members
Preunder-standing	Case A2	5	Face-to-face	Tape recorded	-	yes	yes	Regular discussions with project members
Preunder-standing	Case A3	6	Face-to-face	Tape recorded	-	yes	-	-
Preunder-standing	Consultants and other experts	16	Face-to-face	-	-			-
Preunder-standing	Market survey A: change management professionals	45	Telephone and face-to-face	-	45	-	-	-
Preunder-standing	Market survey B: change management professionals	10	Telephone	-	49	-	-	-
Σ		87			94	3	2	
Con-structing (testing construct version 02)	Experts	14	Face-to-face	Six interviews tape recorded and transcribed	-	-	-	-
Con-structing (testing construct version 02)	Project managers, i.e., users	2	Face-to-face	Tape recorded and transcribed	-	-	-	-
Σ		16			0	0	0	
Testing (construct version 03)	Experts	16	Face-to-face	All but four tape recorded, transcribed and analysed with Atlas software	-	-	-	-
Testing (construct version 03)	12 cases	12 + 5 = 17	Face-to-face	All but one tape recorded, transcribed and analysed with Atlas software	12	From all cases (12)	5 cases	Five action research cases In nine cases, several informal discussions Three cases without any other data except interviews, questionnaires and archives
Σ		33			12	12	5	
TOTAL		136			106	15	7	

Altogether 136 interviews were carried out. Fifty-five of them were part of market surveys. All other interviews were face-to-face and most of them were also tape-recorded. All project managers in the case organisations filled in a questionnaire and documentation was also available from all cases. Altogether seven cases were action research cases; i.e., I had the role of consultant in the project.

5 PREUNDERSTANDING OF THE RESEARCH

Chapter 5 presents the contents of the preunderstanding phase. The chapter starts by introducing the results of a preliminary study and two market surveys. Another important purpose of the chapter is to summarise the observed need for a new construct/artefact and to answer the first research question. Later, in Chapters 7 and *8*, whether the construct was able to meet the criteria in practice is discussed.

5.1 Preliminary study

The preliminary study (1995-1996) was carried out according to principles of constructive research. First, an initial model for describing problems and their causes in change projects was constructed based on a comprehensive literature review. The model was then refined during and after several expert interviews. The interviews were mainly focused on defining the main problems, their causes and critical success factors in change projects. This was followed by case studies concerning three change projects in two different companies. Then the final framework for avoiding problems and achieving goals in change projects was designed.

During the course of the interviews, the main phases of the change project in concern were depicted on a wall chart and the project, its difficulties and success factors, were discussed phase by phase with the interviewee. The purpose of this method was to facilitate recalling all the details in the project.

As the result of the study, problems were divided into two groups, which were change resistance and practical problems. Furthermore, I found that the cause of a problem might be either an inappropriately implemented or a missing task or action. In addition to problems and their causes, people's feelings and skills and circumstances in the organisation were studied – especially those, which preceded problems (Figure 11).

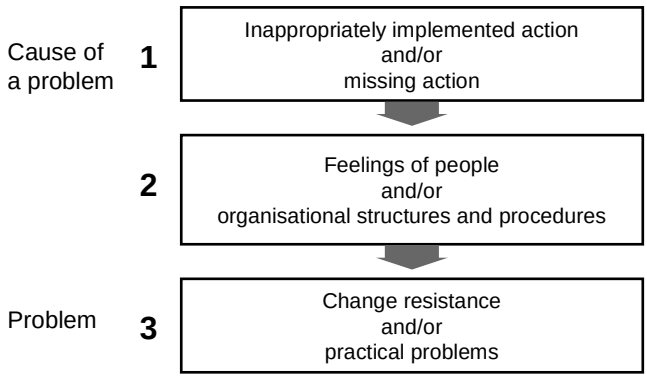

Figure 11 Cause and effect chain studied in the preliminary study

Consequently, I discovered that change resistance and practical problems might take different forms depending on personal and organisational characteristics. In the study, the focus was placed on the feelings employees had before problems and organisational structures and procedures, which jeopardised the success of the project (see Figure 11, box number 2). From this point of view, the obstacles to development could be divided into three categories, which were 1) lack of will, 2) lack of ability and 3) lack of opportunity (Figure 12) to develop the organisation.

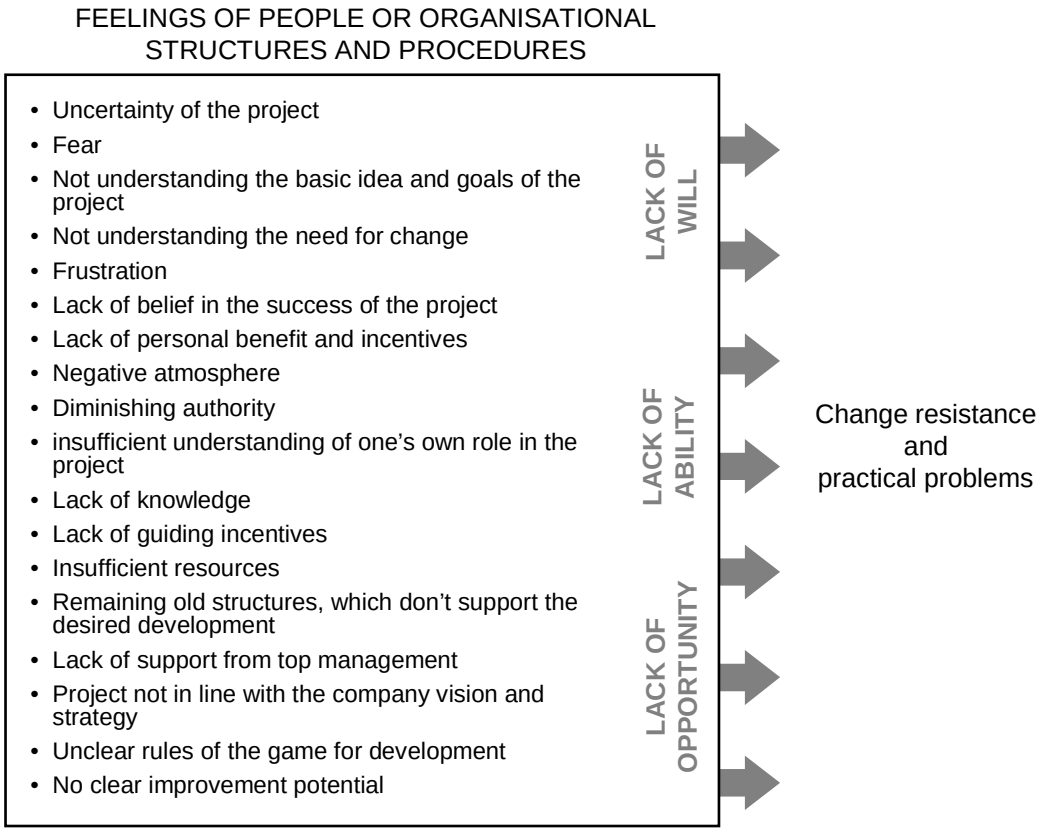

Figure 12 Feelings and organisational structures behind problems

Lack of will, ability and opportunity are explained below.

Lack of will: Employees do not have personal motivation and they do not want to engage themselves in the development. The will would show itself in the willingness and readiness to take concrete actions for development and even to make personal sacrifices for the project. No will does occur unless real effort at developing the organisation can be perceived.

Lack of ability: The level of knowledge and skills is not high enough for being able to develop the organisation. Either basic or job specific skills are not adequate. Basic skills embrace factors dealing with project management and change management in general. Job specific skills enable people to use new tools and machines and to act according to new procedures. Ability also requires comprehension of project vision and understanding one's own role in implementing the change.

Lack of opportunity: Although people in the project would have the will and the ability required, no major development would occur without a supporting environment. Top management support and sufficient resources are essential. Supporting reporting relationships and organisational structures, clear responsibilities as well as rules of the game of development are also key elements for offering an opportunity to change.

The initial basis for a new construct was taken from the framework developed in the preliminary study. The focus was thus placed on people's 1) *will*, 2) *ability*, and 3) *opportunity* to develop the organisation (see Lanning 1996, 143). If people do not have personal motivation and they do not want to engage themselves in the development, willingness and readiness to take concrete action for development are not expressed. The level of knowledge and skills of those who are involved in a change project needs to be high enough to be able to contribute to the project. In addition to this, ability requires

comprehension of project vision and understanding one's own role in implementing the change. Top management commitment, supporting organisational structure, clearly delineated responsibilities as well as the rules of the game of development are also essential elements in offering people an opportunity to change. Table 18 summarises and defines will, ability and opportunity.

Table 18 Definitions of the critical success factors will, ability and opportunity

Desired states	Definition
Will to change	People who are expected to participate in the change project must have personal motivation and a sincere will to engage themselves in the development. The will is expressed as willingness and readiness to take concrete action for the development and even make personal sacrifices. Will does not occur unless real effort at developing the organisation can be perceived.
Ability to change	The level of knowledge and skills of those who are involved in a change project needs to be high enough to be able to contribute to the project. Basic skills embracing factors dealing with project and change management in general, as well as job specific skills enabling people to use new tools and machines and to act according to new procedures must be adequate. Ability also means comprehension of project vision and understanding one's own role in implementing the change.
Opportunity to change	The support for the project planning and implementation from surrounding people and structures. Sufficient resources, top management support and commitment are essential to giving everybody the feeling that change and development can be achieved. Supporting measurement and reward systems, reporting relationships and organisational structure, clearly delineated responsibilities as well as the rules of the game of development are essential elements for offering people an opportunity to change.

An implementation goal-framework for organisational change was designed on the basis of knowing people's feelings and organisational structures and procedures behind the problems in projects. The framework helps to avoid problems and to achieve the project's goals. The basic idea is to create both *will* and *ability* to change and to offer employees an *opportunity* to change (Figure 13). Goals for these three processes are based on people's feelings and organisational structures that precede the problems.

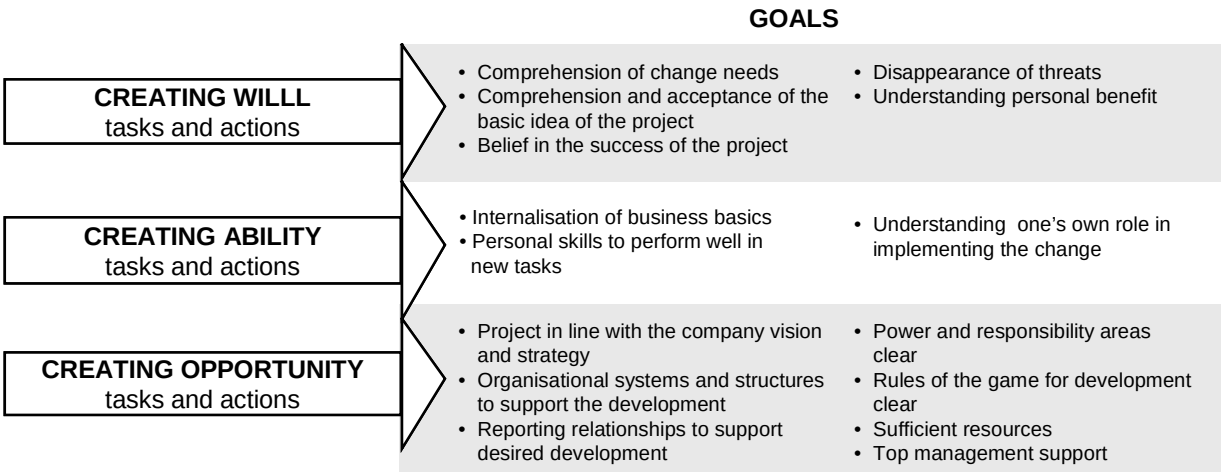

Figure 13 Structure and the contents of the goal-framework

To be able to successfully implement a change project it must be remembered that 1) all three key elements – will, ability and opportunity to change – must be fulfilled. If something is

missing, project's goals will not be achieved. 2) Key elements are interrelated to each other. For example, growing ability may increase the will to develop. 3) The sequence of the elements may vary from one project to another: sometimes the will to change comes first, but it is also possible that it is the last element to develop.

The utmost responsibility of ensuring will, ability and opportunity belongs to the project manager. From Figure 11 it can be seen that there is always a missing or an incorrectly implemented action behind a problem. The project manager is responsible for acting as a starting engine by pushing people a little to bring new ways of doing things into use. Encouragement and maybe even some constraint is usually needed when introducing new procedures – even though employees already had will, ability and opportunity.

However, the above-described goal-framework was not a tool practical enough to guide and lead organisations through successful change projects. It was a simple and good starting point when considering real actions. Thus, the three organisational conditions (also referred to as "critical success factors"), will, ability and opportunity were broken down into tasks and actions for achieving goals presented in Figure 13. Consequently, a more practical framework for change project implementation was created (Figure 14). The tasks and actions were discovered both in the case studies and in the expert interviews.

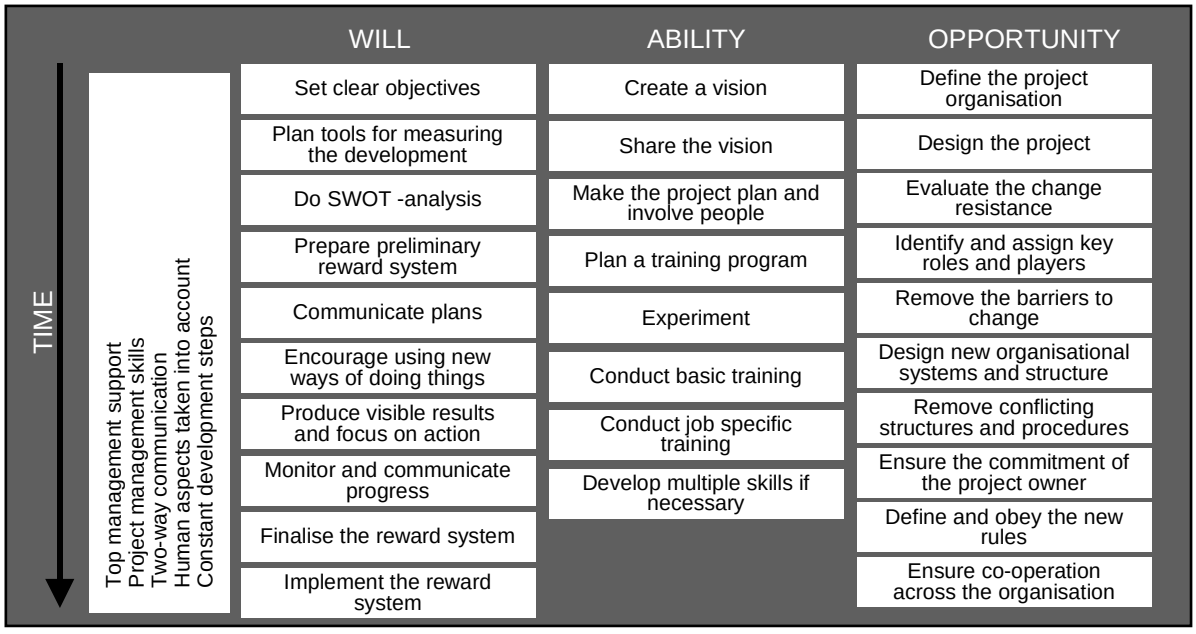

Figure 14 Change project implementation framework in the preliminary study

The framework presented in Figure 14 was one of the main findings in the preliminary study, the basis for further research and acted as a starting point for the thesis. I do not claim that the factors included in the initial framework represent universal success factors of change projects. That is because the purpose was not to establish a complete set of new critical success factors for change projects but rather to come up with characteristics of a useful construct for change project managers.

At the time the challenge seemed to be to further explore the field of organisational change and to turn the framework into a more practical construct to help people struggling with organisational change. The concluding words of the preliminary study report (Lanning 1996, 163) were: "Besides further testing it, the framework can be developed by attaching different

kinds of tools, games, methods or other facilitating modules and instructions (to the framework). In this way, the framework turns into a more practical tool for those people responsible for carrying out change projects".

Later in this report, the reader will discover that the structure of the framework itself has changed due to further elaboration in both theory and practice. However, it will also become clear that the changes in the framework are more or less related to the structure and the emphasis of different factors in the framework. The core elements though have remained about the same.

5.2 Market surveys

Both market surveys (A and B) were conducted as part of course Tu-91-109, Seminar on Marketing Research 1997/1998 at Helsinki University of Technology, Department of Industrial Management. Surveys were designed by our research team and conducted by two separate groups of students from the above-mentioned course. Conducting a market survey was a part of the course program. Surveys and their main conclusions are summarised below. Market surveys are not published but are available at Helsinki University of Technology; A: Kettunen, Kröger and Merenheimo 1998; B: Mikkonen, Pärssinen, Savisalo 1998**.**

Both market survey teams were given introductory material on the planned tool for change project management (construct), research problems, a suggestive list of more detailed questions and a list of people our research team had gathered on change project managers and other change management professionals. Based on this material, both teams had relatively free hands to carry out the research. Later I had an opportunity to study the research data and thus to draw my own conclusions and to make my own interpretations on the material.

5.2.1 Market survey A

Market survey A focused on exploring the markets for a change project management tool in a CD-ROM or multimedia form.

One of the findings in survey A was that at that moment there were no existing products for change project management on the market and there was a clear need for one. However, there were some products for change project implementation, but they only focused on one specific phase or area of change. Usually those products were designed for analysing the current state, planning the change or brainstorming ideas and visions for the future. In addition to that, some large companies had developed and tailored tools for managing their own projects but they were particularly customised according to their needs and were not publicly available.

Another finding was that people were very interested in multimedia and CD-ROMs in general, yet they wished to search information also from a traditional product similar to an ordinary book. Only eight informants out of 42 considered an electronic/multimedia version of the product sufficient alone. All others were more interested in a paper version alone (11) or both paper and electronic product (23).

According to the survey, the most important characteristics in the electronic version were usability and user friendliness. Another point that came up was the compatibility with Microsoft Office programs (Word, Excel and Power Point) and Windows operating system. The most important characteristics of the product according to the survey are summarised in Table 19. Informants judged each characteristics by a scale of 1 to 5 where 1 equals "not at all important" and 5 "very important".

Table 19 The most important characteristics of the product according to the informants

	Not important at all				Very important	
	1	2	3	4	5	N
Usability and user friendliness	0	0	0	12	33	45
Compatibility with Microsoft Office programs and Windows operating system	0	0	4	18	23	45
Graphic interface	1	0	8	19	17	45
Possibility to modify the structure of the product	1	3	7	23	10	44
Possibility to modify individual tools and templates	1	5	11	15	12	44
Simple, modular structure with links	0	6	17	15	6	44
Document templates for project planning	1	11	11	13	8	44
Easy project documentation	1	11	12	12	8	44

An open question regarding the desirable characteristics of the product was also asked in the questionnaire. The most often mentioned characteristics were easiness to update the program, compatibility with other programs, good instructions and user support. Furthermore, it was wished that the product would contain both project management (e.g., planning, follow up and control and reporting) and change management (e.g., a general structure for carrying out change and carrying out practical changes) characteristics.

Because of the small size of the sample, it was not meaningful to make any statistical inferences based on the survey material. However, the information from 45 people did offer some guidelines and basics of the useful characteristics and the need of a new product. Furthermore, the fact that all informants had some experience on change projects increased the reliability of the outcome.

5.2.2 Market survey B

The focus in market survey A was on a multimedia and an electronic version of the construct. Market survey B, in turn, took a more general approach and explored the market potential for a new product and the characteristics that would be useful according to potential users. The survey thus was not limited to an electronic version of the product but also covered a potential paper version.

Market survey B suggested that there was a need for a new construct consisting information, checklists and tools for change project implementation. Although all the informants were chosen according to their knowledge and experience on change projects, only 53 % replied that there was already enough *information* about change projects on the market. Furthermore, 57 % did not have but would need a practical construct, not only a textbook, for change project implementation (Table 20).

Table 20 Informants' perception on the need for both further information about and tool for change project planning and implementation

	Yes	No	Don't know	N
Is there enough information available on change project implementation?	26 (53%)	13 (27%)	10 (20%)	49
I would need new practical constructs for carrying out change projects.	28 (57%)	21 (43 %)	N/A	49

One surprising outcome was that the consulting companies were not as interested in a new construct as the industrial companies. However, opinions among consultants varied from one end to the other. For instance, one experienced consultant noted that almost all the material that consulting companies use are made by themselves, whereas another one was in favour of using all possible material - provided it was useful. Companies also replied that they already had some material – usually tailored for their own purposes. In general, attitudes towards new material were positive.

The question whether the material should be published in a paper format, as a CD-ROM or both was tackled by a direct question on the issue. The results suggested that most of the informants would like to have the material both on paper and as a CD-ROM (Table 21). On one hand, paper is easier to read and, on the other hand, CD-ROM material can be modified and customised and, further, can be more comprehensive.

Table 21 According to the informants, should the material be published in a paper format, as a CD-ROM or both

The most useful form of the product would be:	Paper	Electronic	Both	N
	11 (23%)	9 (19%)	28 (58%)	48

What comes to the general characteristics of a potential construct, practicality in terms of examples and clear instructions for acting were most commonly sought after. According to the survey, practicality also meant fluent text and rich illustration. (Table 22) Informants judged each of the characteristics by a scale of 1 to 5 where 1 equals "not at all important" and 5 "very important".

Table 22 Most important general characteristics of the product according to the informants in market survey B

How important do you see the following characteristics in a product facilitating change project management?	Not important at all 1	2	3	4	Very important 5	N
Practical examples	0	0	3	18	28	49
Clear instructions how to proceed	0	3	7	18	21	49
Novelty	0	2	7	23	17	49
Finnish language	5	6	15	13	9	48
Strong theory base	0	7	21	13	8	49
Price	4	9	26	8	2	49

More detailed wishes in terms of the characteristics were explored by asking those modules and tools that would particularly help informants carry out their change projects. People were asked to answer either “yes” or “no” according to their own needs. (Table 23)

Table 23 The most important modules and tools of a potential product for facilitating managing change projects according to the informants in market survey B

Following items would particularly help me carry out a change project	Yes	No	Don’t know	N
Planning templates	39	7	0	46
Examples and cases	36	5	0	41
Phases of the change project	31	9	1	41
Detailed checklists	26	17	0	43
Concise presentation slides	24	11	1	36
General instructions for using the product	21	16	1	38
Group work and workshop instructions	20	17	0	37
General document templates	13	26	2	41

Interesting was that planning templates were considered very useful but general document templates not. This survey did not find any particular explanation for this result. However, examples and cases were again on the top part of the list along with checklists and clear phases for carrying out the project.

All interviewed informants were in favour of using MS Office programs and thus recommended that the product should be based on them.

When evaluating the validity and the reliability of the research and generalisability of the outcome, the size of the sample brought some limitations. Only 49 companies replied the questionnaire, which did not allow the use of sophisticated tools for quantitative analysis.

Not only the size of the sample, however, caused problems in making firm conclusions. In addition, the method for choosing informants may have caused unwanted bias. It is difficult to assess if the sample was very representative in terms of the entire population, i.e., all change project managers and development managers in Finnish industry. Further, maybe only those replied the questionnaire, who had positive attitudes towards change efforts, in general.

To summarise, the results are considered only suggestive by nature. However, the market survey was planned to be a preliminary study for further research, development and the constructing phase of the study. Hence, suggestive results were quite enough and served the purpose of the research.

5.3 Existing artefacts

Although the need for a new artefact seems to be clear, I summarise the characteristics of some existing artefacts nearly fulfilling the observed needs (Table 24). The first one is MS Project 2000 (www.microsoft.com/office/project) software containing plenty of tools for traditional project management. The second one is a toolkit designed for building teams, in particular. The product was developed at Helsinki University of Technology, Department of Industrial Management. The third product family contains GOAL/QPC (www.goalqpc.com) products that mainly cover quality and project management tools and methods. The main contents of these artefacts are reflected against the characteristics of an artefact for carrying

out change projects summarised in Chapter 2.5. Some terms in the left-hand column are explained and defined in Appendix 1.

Table 24 Some existing artefacts reflected against the current needs of a facilitating construct for change project managers

	Microsoft Project 2000	Team Coach Plus	GOAL/QPC – products	The current need
Practical	Yes	Yes	Yes: practical tools combined with textbooks	Practical tools for planning and implementation. Easy to tailor and use. Proved practical relevance and functionality
Comprehensive (covers planning and implementing phases from project launch to its assessment and termination)	Some: covers almost all phases	Yes	No: covers only some parts and phases of a change project	An integrated construct that offers help from the planning of change to implementation and assessment of it
Generic (not designed for any special kind of change)	Yes: generic for traditional projects	No: especially designed for team building	Yes: generic for the specific phase	A construct that can easily be used for different kinds of change projects
Change projects (pays attention to special characteristics in change projects, contains traditional project features)	No: does not pay attention to special characteristics in change projects; lacks change management	Some: pays attention to special characteristics in change as far it is about team building, does not have project approach	No: does not pay attention to special characteristics in change projects, no project approach	A construct that pays attention to the special characteristics of organisational change and offers support for both managing projects and managing change
Operative level (offers help for implementing changes in practice)	Yes: tools for operative work	Yes: tools for operative work	Yes: tools both for strategic and operative work	Tools for operative, not only for strategic level
Language	English	Finnish	English	Only the largest international companies need it in English. Others prefer their native language (Finnish)

As summarised in Table 24, practical tools for the operative level can be found. However, they do not integrate the entire change project but cover only some parts of it. Neither do they combine issues of managing projects and managing change. The problem in the existing artefacts is that they are not designed for change projects, in particular, and thus do not contain elements especially important in carrying out organisational and operational changes.

5.4 Summary and observed needs for an artefact

It was discussed already in Chapter 1.1 that dynamic business environment today requires frequent changes both in the way organisations operate and in the organisational structure. Several authors (e.g., Eichelberger 1994, 87; Salminen 2000, 7-10) agree on the fact that it is

increasingly important for companies to successfully carry out changes in the organisation. The entire future of organisations may depend on the success of the change projects.

Despite the importance of developing organisations, many change efforts simply fail (e.g., Hammer and Champy 1993, 214; Kotter 1996, 3; Salminen 2000, 8; Schaffer and Thomson 1992, 81). A significant amount of the waste and failures could be avoided if only more energy and attention was put into implementing changes. The problem, however, seems to be that there are no practical constructs designed for carrying out *change* projects, in particular.

Traditional project management theories and practical tools are abundant. However, due to special characteristics of change projects, they are not very effective and practical for delivering changes in organisations. That is, internal change projects form a special category of projects having distinguishing characteristics and thus requiring somewhat different emphasis of project management compared to projects that are more traditional and typical in the fields of engineering facilities and construction. (Mikkelsen et al. 1991, 77; Eichelberger 1994, 90; Boddy and Buchanan 1992, 9; Salminen et al. 1998, 524) The obvious need and, consequently, the growing adoption of project-based principals for changing organisations together with the distinctive and unique nature of change efforts call for new models and constructs of project management. (Partington 1996, 15; Boddy and Buchanan 1992) Consequently, existing and traditional project management models and tools are not able to solve the problem and thus the need for a novel construct is obvious.

New constructs should thus be designed for carrying out change projects in organisations. This notion was strongly supported both by the existing literature (Chapter 2) and the market surveys reported in Chapter 5.2. Literature offers various kinds of frameworks and even phase models for carrying out changes but it does not offer practical enough guidance to carry out changes at an operative level, i.e., how to implement plans in practice. They also lack features of traditional project management, which are important for delivering changes effectively and efficiently (Salminen 2000, 148).

In the market surveys, the question of potential need was explored by searching existing artefacts in the Internet and by asking survey informants' opinions regarding the matter. One of the findings in both surveys was that, there are no existing practical artefacts for change project management and there is a clear need for one. According to survey results, there are some artefacts for planning or carrying out changes, but they only focus on one specific phase or area of change. The existing artefacts are not comprehensive and do not integrate different tools and methods to form one coherent construct.

In addition to literature and surveys, my personal networking and discussions with practitioners and researchers and participation on conferences (Appendix 6) has also been an important source of information on existing artefacts and needs for new ones. During the last six years of studying the subject of change project management, I did not come across with any constructs especially designed for carrying out change projects.

Based on existing literature, the preliminary study, the market surveys and informal gathering of information, there are no constructs available and change project managers would need a practical and guiding construct to be able to manage successfully complex change projects. A tool that helps overcome the greatest obstacles and offers guidance to avoid problems before they even occur would be of great importance to those engaged in change project planning and implementation.

Consequently, ***the answer to the first research question is**: **Yes**, there is a need for a new practical construct for change project managers to facilitate them to plan and implement change projects.*

The construct should contain both a concise “manual” version and electronic material available e.g., in a CD-ROM disc. All tools should be made of software compatible with MS Office programs and special effort should be put on making the user interface simple and easy to use. In general, user friendliness and practical approach were the most highly appreciated qualities in the product. Another wished character was the possibility to modify the product for own purposes.

The construct should offer a clear phase model or a framework to follow, yet it should also be possible to use only those parts in the construct needed in each change effort, in particular. Planning templates, practical examples and checklists were listed high in both market surveys. Furthermore, although the purpose was not to study the environment of the product dissemination, it became quite clear that clear instructions, support and training were seen very important in terms of a successful use of a potential construct. These results combined with the preliminary study outcomes formed the basis for designing the construct.

From now on, the new artefact that solves the research problem and offers a solution to the current needs is called Change project managers E-Guide (CEG). The rest of the report presents different versions of the CEG, introduces the designing phase of the construction and summarises the evaluation results of the CEG version 03. Finally, in Chapters 8 and 9, it is possible to give answers to the rest of the research questions and to validate and to evaluate the research.

6 CONSTRUCTING

This chapter sheds some light on the development process and the evolving ideas about the CEG. The development process of the CEG is made explicit and thus it will stand out that the process itself followed a strict formula and guideline. The iterative nature of the development is also described in order to give a full picture of the process as a whole. The reader is thus offered a chance independently to judge the merits, the validity, and the reliability of the research. The initial criteria for both the usability and the usefulness of the construct are also introduced in this chapter.

6.1 Construct's background and objectives

CEG was originally designed for planned and goal oriented change efforts in organisations. However, the initial idea was that it should be possible to tailor the CEG and thus use it in a great variety of change projects and organisations. Furthermore, although it includes a comprehensive set of tools and methods, the purpose was not to use the complete set of tools in every change project but, rather, to choose the best suited ones for each particular organisation, project and situation. For this reason, it was noted that the user of the CEG should have some previous experience or knowledge on organisational change.

As stated in our original project documents, the objective of the CEG was to help project managers carry out change projects in an effective and efficient way. Furthermore, if the CEG was systematically used in all change projects, a coherent understanding on change project implementation would be formed within the organisation. The CEG should thus enhance organisational learning and help to build up and adopt standard project management procedures in change projects.

The purpose of the CEG was to concentrate on the characteristics and needs of a change project, in particular, and to offer information and tools for both planning and implementing change. To summarise, our research team's initial objectives for the CEG were to:

- Help project managers to successfully carry out change projects (both planning and implementation)
- Save project manager's time and effort
- Foster organisational learning by developing and disseminating effective project management procedures (a long term objective)

The third objective implies that one purpose was to transform the culture of the organisation by introducing new ways of carrying out change and facilitating organisational learning towards new kind of thinking and acting. In other words, a long-term objective was that in the user organisation, new procedures would gradually become ingrained in the organisation's culture. However, the monitoring of this objective was beyond the scope of this thesis.

6.2 Means for achieving the objectives

From the very beginning of the construction, some guidelines and principles were realised and made explicit in the CEG. One of the CEG's main methods for achieving the objectives was to draw project managers' attention to critical questions and tasks in each phase of the project in order to avoid problems and to ensure a successful implementation. However,

another way was to offer simple and tested document templates and other material that could easily be customised for the needs of each particular change project.

Criteria for a successful new construct for change project managers were captured from many different sources. First, Chapter 2.5 summarised the criteria from the literature review: practical, for an operative level, including also traditional project management methods, paying attention to distinctive features of changing organisations, generic and comprehensive. Further criteria reflected the characteristics of good constructive case study results; that is, link to existing theory, theoretical novelty, practical relevance, practical usability, practical usefulness and the possibility to use the construct also in other environments (see Chapter 3.4). Market surveys elaborated some more characteristics and criteria which would enhance the usability and the usefulness of the construct (see Chapters 5.2 and 5.4). Table 25 summarises all the criteria for a well functioning construct and good constructive case study and introduces the suggested methods for fulfilling the criteria for a well functioning construct. Later, in Chapters 8 and 9, it will be verified and evaluated if the research and the construct was capable of fulfilling all the criteria.

Table 25 Main criteria for the research and its outcome and suggested methods for fulfilling the criteria for a well functioning construct

Criteria for a well functioning construct and good constructive case study	Suggested methods for fulfilling the criteria for a well functioning construct

Based on the research strategies:
• Construct's connection to the existing theory and theoretical novelty
• Practical relevance of the construct
• Proved use of the construct
• Proved practical usability, e.g:
  • Simple and easy to use
  • User-friendly
  • Possibility to modify
  • Tempting
• Proved practical usefulness, e.g:
  • Assists and supports project success
  • Brings in effectiveness and efficiency
  • Keeps the focus on critical actions
  • Less problems
Based on literature review, preliminary study and market surveys:
• (Practical: see above)
• Comprehensive
• Generic
• Including also traditional project management view
• Paying attention to distinctive features of changing organisations
• For an operative level
	• Comprehensive contents based on success factors of carrying out change
	• Contains two separate artefacts: both a paper and an electronic part
	• All tools made to be software compatible with MS Office programs
	• Clear chronological phase model, even though change projects rarely follow a predefined path
	• Modular structure; modules attached to different phases
	  • Theory summary
	  • Checklists
	  • Short case descriptions
	  • Tasks for the project manager
	  • Practical tools (templates, examples and group works)
	• Training included in the user package

The structure for the CEG was created by the above listed principles. However, the exact contents were still open, yet I did already have a picture of the critical success factors and most common problems in change projects. The change project implementation framework introduced in the preliminary study (Figure 14) was not a tool practical enough to guide and lead organisations through successful change projects. However, it was a simple and good starting point when considering the actions and tools for a successful change project implementation. The challenge was, therefore, first to derive from the framework a simple

implementation method consisting of a step-by-step path to follow and then to find practical and useful tools for different phases in the path.

Therefore, the basis for the first version (01) of the CEG was taken from the guidelines presented in the preliminary study. The focus was thus placed on employee's 1) *will*, 2) *ability*, and 3) *opportunity* to develop the organisation (see Lanning 1996, 144). At the same time, a new emphasis, i.e., project management[29] (which was also turned into "discipline") was brought into the framework and a more detailed description of objectives for fulfilling each success factor was described (Table 26). From now on, will, ability, opportunity and discipline are also referred *as initial success factors* for change projects. This approach was born in the winter of 1997/1998 through exploring more literature and by gathering new experiences from case studies.

[29] Although "project management" or " discipline" is introduced here as a new issue, the elements of project management were embedded in the preceding framework, as well. In other words, at this phase the development of the framework was rather a question of new emphasis than of a totally new issue or element added in the existing framework. Our research team just wanted to put more emphasis on discipline and project management methods as a result of findings in preliminary studies.

Table 26 Structure for turning critical success factors and objectives into concrete action points

Initial success factors	Explanation	Objectives	Means to achieve the objectives (actions, tools etc., not reported here)
WILL	All groups and levels of personnel committed to the change effort	•Understanding the need for change •Project credibility •Understanding personal benefit •Avoiding and dealing with change resistance •Sufficient and effective communication •Superiors' supporting and encouraging behaviour •Provision of feedback on progress •Clear and approved goals and means to achieve them •Realistic goals •Measurable goals •Supporting incentive systems •Participation •Fast results	129 different practical means to achieve the objectives
ABILITY	Knowledge and skills to do what is needed to achieve goals	•Comprehension of project vision and goals •Knowing new methods and tools •Understanding one's own role •Project manager's ability to commit people •Project manager's ability to empower and assign tasks •Project manager's ability to solve problems •Project manger's sufficient knowledge on the project area •Project manger's sufficient project management skills •Sufficient and appropriate training •Ability to search for right kind of training	46 different practical means to achieve the objectives
OPPORTU-NITY	Environment, conditions, systems and structures supporting the change	•Top management support and commitment •Removing the obstacles of development •Top management's mutual understanding of the purpose, goals and means of the project •Balance between goals, schedules and resources •Project goals in line with the strategy and other endeavours in the organisation •Authorities defined to facilitate changes •Enough authority to make and execute decisions •Appropriate participation •Supporting systems and structures	53 different practical means to achieve the objectives
DISCIPLINE	Applying traditional project management methods and ensuring effective and efficient working	•Well defined and clear goals •Purposeful project planning •Efficient project organisation •Defining rules and roles •Monitoring and controlling development •Risk management •Responding to problems •Effective working methods •Project assessment	15 different practical means to achieve the objectives

Planning and constructing the CEG was a creative and iterative teamwork process. Different kinds of methods such as wall charts and brainstorming sessions were used during the planning process. The actual process of developing the CEG began with converting initial success factors and the objectives related to the success factors into concrete action points.

For instance, “top management support” was transformed into several useful actions such as “ensuring the resources needed for implementation” and “regular follow-up meetings with top management”. More than 500 different action points were listed in the first stage of the development process. However, later the number of the action points was decreased half by combining similar kinds of actions.

After the creative planning phase, the actual development work of the CEG was carried out in a systematic manner. All actions, practical tools and methods were classified and arranged in a chronological order to form a step-by-step path for successful project implementation[30]. Actions and other ideas were then placed horizontally into chronological project phases and vertically into three different parts: 1) issues which must be taken into account during the entire project, 2) general ideas and critical actions and 3) concrete tools and methods for completing an action. At this time, some effective and earlier tested tools, exercises, group work and training material were added. Existing tools and techniques, literature and the researchers’ field experiences in different companies were used as support and as a source of ideas and methods. The wall chart served as a preliminary structure and contents of the CEG.

Gradually, all action points and tools were grouped in different phases. Each phase formed a section in the CEG consisting of modules needed or helpful while moving ahead in the path of development. Phases usually, but not necessarily, follow each other in a certain sequence. A change project may include some iteration between phases and relative weights may also vary by project: some projects are more analysis oriented; some require an enormous effort in communicating and motivating, while others tend to concentrate on training.

For practical and usability reasons, the number of phases varied in the different versions of the CEG. Version 01 had 15 main and 32 sub-phases, version 02 20 and version 03 14 phases. In general, the number of phases decreased throughout the construction process because it made the construct easier to comprehend and to use. However, the initial success factors stayed the same and the product has always been modular.

6.3 Description of different versions of the construct

In this chapter, a short summary of all three versions of the CEG is presented. Table 27 summarises the main characters of different CEG versions.

[30] Squeezing a complex change effort in a phase model is always somewhat artificial and does not describe the real life situation. However, a product like CEG is always a simplification of the reality and, furthermore, according to the preliminary study and feedback from project managers, a structured and clearly phased construct was needed in organisations.

Table 27 The summary of different CEG versions (information taken from documents concerning each version)

	VERSION 01, FALL 1997	VERSION 02, FALL 1998	VERSION 03, WINTER 98/99
Basic characters	Consists of a round binder and a CD-ROM disc Thickness: 70 mm Weight: 1450 g Pages: 143, A4 format The same material in the round binder and in the CD-ROM All documents made with MS Power Point software No user interface, files browsed with file manager, explorer etc.	Consists of a round binder and a CD-ROM disc Thickness: 70 mm Weight: 2650 g Pages: 315, A4 format The same material in the round binder and in the CD-ROM Documents made with MS Power Point, MS Word and MS Excel No user interface, files browsed with file manager, explorer etc.	Consists of a manual and a CD-ROM disc Thickness: 9 mm Weight: 250 g Pages: 130, A5 format Different material in the manual and in the CD-ROM. Documents made with MS Power Point, MS Word and MS Excel A simple user interface made with Adobe Acrobat links
Main elements in the framework	•Will •Ability •Opportunity	•Will •Ability •Opportunity •Discipline	•Will •Ability •Opportunity •Discipline
Modules	•Map of all phases •To do list •Tools (templates, examples and group works) •Overhead transparencies	•Map of all phases •To do list •Short description •Checklists •Tools (templates, examples and group works) •Tasks •Minicases •Overhead transparencies	•Map of all phases •To do list •Short description •Checklists •Tools (templates, examples and group works) •Tasks •Minicases •Overhead transparencies
Phases	1. Need for change 2. Analysis 3. Choosing steering committee 4. Organising steering committee 5. Selecting project manager 6. Identifying key persons 7. Defining vision 8. Defining consultant's role 9. Participating 10. Risk analysis 11. Goal setting 12. Scope definition 13. Work break down structure 14. Organisation 15. Scheduling 16. Budgeting 17. Communication plan 18. Creating project plan 19. Communicating project plan 20. Training plan 21. General training 22. Setting up project teams 23. Development by project teams 24. Ensuring opportunity to develop 25. Job specific training 26. Fast results 27. Follow up and documentation 28. Measurement 29. Modifying reward system 30. Consolidation 31. Termination 32. Assessment	INITIAL PHASE 1. Need for change 2. Analysis 3. Project organisation 4. Goals and vision 5. Scope definition 6. Planning and writing project plan 7. Risk analysis 8. Identifying key persons 9. Metrics for follow up CHANGE 10. Motivating personnel 11. Responding problems 12. Effective project team procedures 13. Fast and tangible results 14. Communication 15. General and job specific training 16. Follow up and control 17. Carrying out practical changes CONSOLIDATION 18. Consolidating changes 19. Project termination 20. Project assessment APPENDIX Group work instructions	INITIAL PHASE 1. Need for change 2. Analysis 3. Establishing the project 4. Key persons and project organisation PLANNING 5. Goals and vision 6. Project plan EXECUTION 7. Motivation 8. Follow up and control 9. Development groups 10. Communication 11. Training 12. Practical changes CONSOLIDATION 13. Termination 14. Assessment APPENDIXES Group work methods Wall chart techniques

Version 02, which we now have a closer look at, was constructed in the form of a work book folder but its separate files could also be used with Microsoft Office programs. However,

there was no user interface, i.e., all files were organised in and accessible through e.g., Windows File Manager.

Each phase began with a short description of the subject, which briefly answered the question "Why this phase should particularly be carried out?" This was followed by some critical self-assessment questions concerning the implementation of the phase at hand.

In addition to checklists and tools, each step included some real life examples or short case descriptions from various organisations. The purpose of examples was, on one hand, to encourage project managers and, on the other hand, to fire some warning shots from other companies struggling with similar kinds of problems. The last item of each section was a set of transparencies a project manager might need for presenting and emphasising some crucial points of the phase.

When using version 02, the first job was to assess the most important elements of the change project about to begin. After recognising these distinctive elements and features, the CEG should have been tailored for that specific change project by removing those pages from the round binder that would not be needed during the implementation. Furthermore, new parts such as tailored tools could have been added to the round binder if needed. However, in many cases tailoring the CEG proved too difficult to carry out in practice.

6.4 Feedback on version 02

The most important feedback method in the constructing phase was face-to-face interviews (see interview guideline in Appendix 7). Comments were given on both the perceived usefulness and the usability of the construct. Feedback was gathered from fourteen experts and two users.

Because the feedback on the CEG version 02 acted as a basis for further development of the construct, only general improvement ideas on the structure and the contents are reported here (Table 28). Almost all respondents also offered very detailed improvement ideas. Those are not summarised in this report.

Table 28 Main comments on the CEG version 02

Code	What should the changes be?	Code	What should the changes be?
E1	Different phases should be more equally emphasised Clearer and more simple structure Some phases should be combined More emphasis on project resources and finance More material to the end phases of a project Several small changes in the contents	E9	More discussion on the purpose and applicability of the construct
E2	Clearer structure More emphasis on project resources and finance Less written text Combining phases More material to the end phases of a project Several small changes in the contents	E10	More emphasis on supporting tools for implementation
E3	More emphasis on creativity More emphasis on project finance	E11	Offering optional tools and phases Several small changes in the contents and the structure
E4	Combining phases More practical examples More practical tools Several small changes in the contents	E12	Simpler and clearer structure Shorter and more concise Several small changes in the contents and the structure
E5	Less pages Combining phases More consistent terminology Simpler structure Several small changes in the contents	E13	Shorter and more concise Several small changes in the contents and the structure
E6	Shorter Several small changes in the contents	E14	Several small changes in the contents and the structure
E7	Simpler user interface More emphasis on final touch (language, structure, figures, layout etc.) Simpler and more logical structure More practical tools Combining modules Better describing names Clearer instructions for using tools Less written text Several small changes in the contents	G1	Too thick manual frustrates Too thick, no time to browse through it Difficult to use Heavy to carry
E8	More optional tools	G2	Too much material Difficult to use in practice

One very clear message was that the CEG should be more concise and practical tools and examples should replace much of the written text. Many phases could be combined to form larger and better understandable entities. Moreover, some tools were overlapping, i.e., had a similar kind of objective. Those tools could easily be combined. Many informants noted that the beginning of the construct, i.e., the first phases of the change effort were better covered and later phases, such as implementation, should thus be strengthened in the future.

Other main comments handled the usability of the construct, that is, the user interface and easiness to use different modules and tools in it. It was difficult to find the modules you needed, many tools were insufficiently introduced and explained and final touch, in terms of layout and language, was needed in many places.

Dozens of other valuable comments on the contents and the structure of the CEG were also recorded. They were, however, minor individual changes and seemed to reflect strongly informants' background and earlier experiences on project management and organisational change. Comments were discussed among our research team and, consequently, some of them were realised as changes in the new version of the construct.

7 TESTING THE CONSTRUCT

This chapter begins by describing the structure and the contents of the CEG version 03 in detail. One purpose is thus to offer a comprehensive picture of the construct that was developed in the course of the study. A detailed description forms a basis for evaluation of the contents and connecting it to existing theories.

The main contribution in Chapter 7 is the evaluation and testing of the construct. The purpose is thus to check if the CEG was capable of meeting the criteria defined in earlier phases of the research. One set of criteria was set based on the preunderstanding and literature review. More criteria were then derived from the theory of constructive research strategy. The summary of the criteria for a good construct were introduced in Chapter 6.2 (Means for achieving the objectives).

The evaluation of the construct and thus reporting was twofold.

- First, the contents of the CEG were scrutinised and reflected against the existing theories. Potential success factors of change projects found in the literature review were summarised in Table 5 p. 35, and the contents of the table was thus used as one basis of evaluation. The purpose is to prove that the CEG has a clear connection to the existing theories of both change management and project management (see Chapter 2.3.17).
- The contents of the CEG were also reflected against the *initial* success factors of change management that were the basis for constructing the CEG (see Table 26, p. 90). In that way, it was checked that although the CEG evolved continuously according to the comments and feedback, it had not gradually drifted away from its original objectives.
- After the theoretical assessment, the focus was moved to evaluating the practical functionality of the construct. The use, usability and usefulness of the construct are discussed through an extensive evaluation of sixteen experts and twelve case analyses including the same number of users of the CEG. Cross case analysis and interpretation of the data is also included in this chapter. Thus, Chapter 7 forms an important basis for the verification and validation of the research.

When evaluating the practical functionality, the CEG version 03 was first given to sixteen experts – mainly consultants – for further evaluation. The purpose was not to find out if experts would start using the CEG in their own work but to receive feedback on the strengths and weaknesses of the CEG based on experts' experience on the field. Furthermore, twelve case studies were carried out in order to find out how real users perceived and used the product and how it worked in different organisations and change projects. Originally, the CEG was given to fifteen change project managers but later three of them had to be dropped out since they did not have any real change project underway. Both, experts and users were interviewed (see interview outline in Appendix 7). I wanted to put more emphasis on the users and let them also answer a questionnaire (Appendix 8). In some of the cases, I also applied some principles of action research as I participated the client's (user's) change project as an expert and a trainer. In this way, I received invaluable information on the use, usability and usefulness of the CEG and was thus able to evaluate and to validate the construct.

7.1 Description of the construct version 03

The CEG version 03 was developed from the previous version according to the feedback from both users and experts. One of the most salient changes compared to previous versions was to significantly reduce the size of the manual and to develop a simple user interface for browsing, searching and opening documents. The number of phases was reduced from twenty to fourteen and all tools were modified to make them more effective and user friendly.

> *"The manual was much easier to use than in version 02, which increased the amount of the use." (B4/Q/03)*

The CEG 03 was constructed in the form of a 132-page four-colour manual and a CD-ROM disc (Figure 15). The summary of the structure and the contents of both artefacts are presented later in this Chapter.

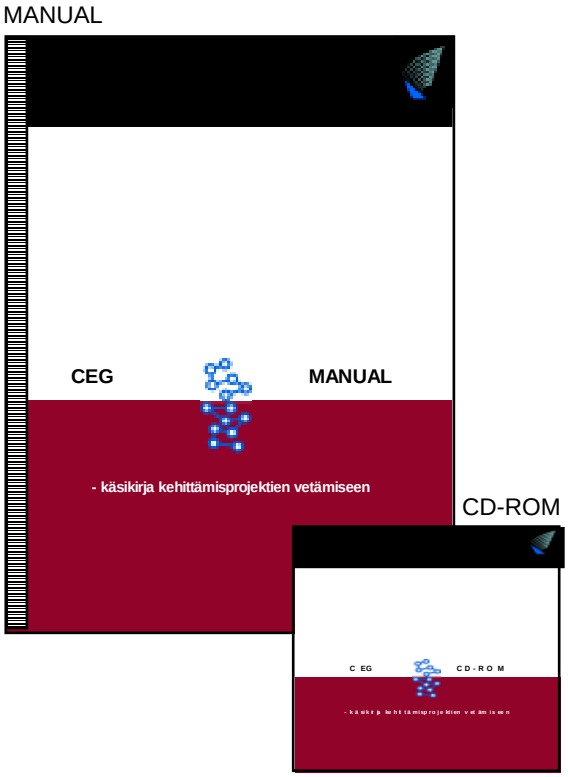

Figure 15 CEG version 03 consists of a manual and a CD-ROM disc

The planning and implementation of a change project is presented by fourteen phases that roughly describe the sequence of different phases in a change project (Figure 16). However, as already earlier discussed, a project includes some iteration between phases: risk assessment may, for instance, lead to a change in goal setting or more detailed analysis may be carried out even if the project is already well underway. Communication is not only needed in phase 10 but is an essential element throughout the entire project. Furthermore, the relative weights of the phases may vary from one project to another. It is thus the responsibility of the user to decide which parts of the CEG are most prominent for successfully carrying out the project. That, in turn, prerequisites some previous knowledge of carrying out organisational change.

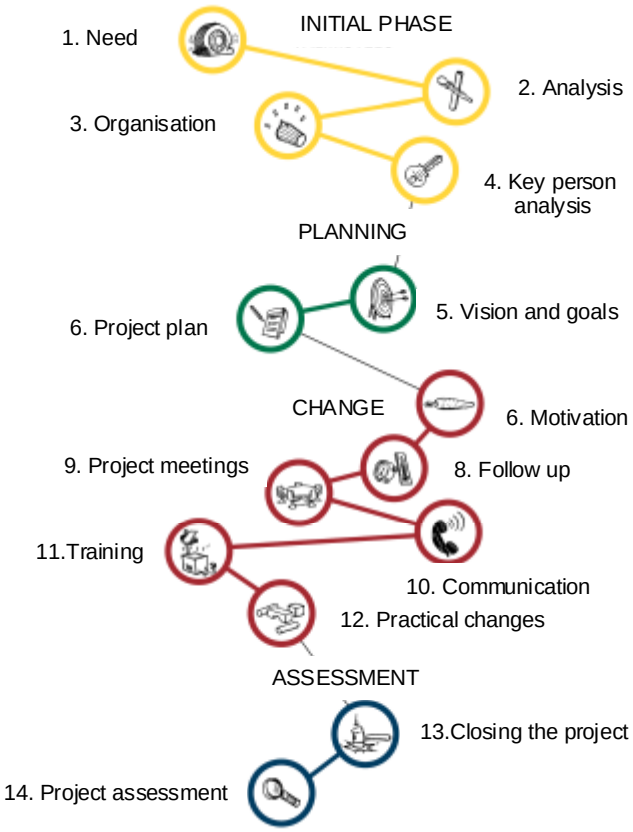

Figure 16 Phases of the CEG version 03

In addition to 14 phases, CEG also has a general introduction chapter in the beginning and both the group work method and wall chart technique introductions at the end of it. The general introduction sheds some light on the background of the CEG and gives guidelines for effective use of it.

Each phase forms a section in the CEG consisting of modules needed or helpful while moving ahead in the path of development. They begin with some critical self-assessment questions concerning the implementation of the phase. For instance, the project manager may be asked if s/he has ensured that everybody in the project team agrees on the project objectives and has a similar perception of the amount of effort needed for a successful implementation. This is followed by a short description of the subject, which briefly answers the question “Why this phase should particularly be considered?” Furthermore, the product offers simple and tested tools, such as document templates and group work guidelines and other material that can easily be customised for the needs of each particular change project.

Different modules used in the CEG are described in Table 29. The emphasis of modules in each phase may vary. Some phases may focus on checklists whereas some may contain a rich variety of practical tools or individual tasks for the project manager.

Table 29 Different modules used in CEG version 03

Module symbol	Explanation
	A MAP OF ALL PHASES: There is a map of all phases in the beginning of each phase. This facilitates keeping in mind the complete picture of the project even while concentrating on one specific phase of it at one time.
	A TO-DO LIST: A “Have you done it all” checklist is presented on the page after the map of all phases. Its purpose is to guide the project manager to emphasise the most critical tasks in each phase of the project. However, this checklist also acts as a follow up and monitoring tool in the project implementation. If the project manager has completed all tasks in the list, he or she is following the path of critical success factors and thus heading to a more successful project termination.
	A SHORT DESCRIPTION: TO-DO list is followed by a short – from 10 to 15 lines – description of the phase concerned. The main purpose of it is to justify the existence of that particular phase and to motivate the user to have a closer look at the contents of it.
	CHECKLISTS, reminders and guidelines: In addition to the above-mentioned TO-DO lists, each phase may contain checklists and systematic guidelines for completing a particular task. The nature and contents of these lists vary a lot and they are scattered in different places of each phase. A checklist may e.g., be titled “how to ensure top management support”, “remember this when designing measurement” or “steps for conducting a current state analysis”.
	A TASK: This symbol refers to an individual task for the project manager. Usually it is a problem to think over or a planning task to be completed. Typically, a task for the user could be “remember to let project personnel comment the project plan” or “list five most important reasons why people are resisting the project and plan solutions to reduce the resistance”.
A MINICASE	A MINICASE: Minicase is a brief and concise description or example of a particular phenomenon in a change project. The purpose of it is to shed more light either on critical success factors or imminent problems and threats in the project. A minicase may thus e.g., describe a successful pilot project launch or an effective follow up and feedback procedure. The length of a minicase falls normally between 10 and 15 lines.
TOOL DOCUMENTS 	A DOCUMENT TEMPLATE: Templates are used both for planning and documenting different phases and issues of the project. Document templates are only offered in the CD-ROM disc and, normally, they are made with MS-Word software. Project plans, analysing matrix, risk analysis matrix, project meeting agenda and minutes represent typical types of templates. The purpose of a document template is to offer a simple tool and format for completing a task, and to make sure that the most important phases and information are documented for the later phases of the project and future projects.
	A GROUP WORK OR A WORKSHOP: This sign indicates that a task should be completed or planned by a group of people. As well as document templates, also group works are only offered in the CD-ROM disc. Since the entire CEG supports and facilitates empowerment and participation, quite a few tasks are encouraged to be completed as the result of a group work. In the beginning of each group work, detailed information is offered how to carry out that specific task. The CD-ROM contains presentation transparencies for carrying out a group work, i.e., introducing it to the audience, presenting different phases of it and providing templates for presenting and analysing the results of each group.
	AN EXAMPLE: It is either a filled in document template or a completed group work. They are only offered in the CD-ROM disc. For instance, an example may be a description of a project organisation, a completed project plan or results of a group work. An example thus works as introduction for carrying out a task in work groups or filling out a document template.
	A TOOL: A tool is a set of document templates, examples and group works with a common goal. All templates, examples and group works belong to a certain tool. The total number of tools in the CEG is 32. The goal of a tool may e.g., be “to achieve a mutual understanding on the project scope and objectives” or “to plan and implement the closing of the project”. The purpose of a tool is to combine those templates, group works and examples together, which have a common goal. In this way, tools make the structure of the CEG simpler and, consequently, easier to use.

In summary, the structure of the CEG is modular, consisting of a 14-phase model and various kinds of modules attached to each phase of it. The number of modules in different phases of the CEG is summarised in Table 30. In the “TO-DO BULLETS” column, the number

indicates how many bullets are included in the list. The number inside parenthesis, in turn, represents the number of sub-bullets in the bulleting list, for some main bullets are enriched by sub-bullets to provide more accurate information regarding the TASK to be accomplished. In both the "CHECKLISTS" and "TASKS" columns, the first number indicates how many different lists can be found in that particular phase. The number in parenthesis gives the number of bullets in the CHECKLIST or TASK. 4 (8) thus means that this phase contains four different TASKS for the project manager with eight bullets (sub-tasks) altogether.

Table 30 Quantity of different modules, i.e., the number of modules attached to the phases of the CEG

	Both in the manual and the CD-ROM				Only in the CD-ROM			
Phase of the CEG	To-do bullets	Checklists (bullets)	Tasks (bullets)	Minicases	Tools	Templates	Examples	Group works
Introduction	0	1 (12)	0	0	1	2	0	0
1. Need for change	6	2 (11)	1 (2)	0	2	1	2	2
2. Analysis	4	2 (20)	0	0	2	1	3	1
3. Establishing the project	11	7 (41)	0	3	3	1	1	4
4. Key persons and project organisation	11 (+3)	9 (54)	2 (7)	3	4	8	4	1
5. Goals and vision	10	4 (27)	1 (4)	2	2	2	1	2
6. Project plan	21 (+5)	2 (20)	0	1	4	3	6	2
7. Motivation	14 (+5)	5 (34)	4 (8)	2	2	0	2	2
8. Follow up and control	9 (+2)	3 (21)	1 (1)	3	3	4	2	2
9. Development groups	5 (+5)	1 (14)	0	1	2	3	1	2
10. Communication	7 (+6)	3 (21)	0	1	2	1	1	2
11. Training	6	3 (15)	0	1	2	4	3	0
12. Practical changes	2 (+8)	2 (17)	0	3	0	0	0	0
13. Termination	10	7 (40)	3 (5)	1	2	1	0	2
14. Assessment	4 (+4)	3 (21)	2 (2)	2	1	1	2	1
Group work methods	0	2 (20)	0	0	0	0	0	0
Wall chart techniques	0	1 (4)	1 (1)	0	0	0	0	0
Σ	**120 (+38)**	**57 (392)**	**15 (30)**	**23**	**32**	**32**	**28**	**23**

Table 30 shows how different modules are represented in all fourteen phases in the CEG. A closer look at each column reveals that several phases do not include any individual TASKS for the project manager. The number of TASKS is lower than other modules, which refers to the emphasis on participation and group work. Furthermore, some times it is difficult to distinguish TASKS from CHECKLISTS and TO-DO lists as they may also contain small jobs for the project manager. For this reason, it is not alarming although some phases do not contain any TASKS.

In addition to columns, Table 30 should also be read by rows. This method highlights those phases in the CEG that are both the best and worst represented by different modules. In this respect, "practical changes" seems to be the weakest of all phases, since it neither includes

TASKS nor TOOLS. This is quite obvious since the CEG is not designed for any particular kind of change but serves equally all kinds of organisational change efforts.

If Table 30 clarified the quantity of different modules in the CEG, Table 31, in turn, summarises the quality, i.e., the contents or the purpose of the modules. The titles, objectives or purposes of all modules in various phases are presented in the table. The initials T, E and G indicate if the TOOL in concern contains TEMPLATES (T), EXAMPLES (E) or GROUP WORKS (G). (T, G) thus means that this particular TOOL contains both a document TEMPLATE and a GROUP WORK.

Table 31 Qualitative description of different modules in the CEG version 03. The number in parenthesis indicates that more than one module represents the issue concerned.

Phase	Tools	Checklists (contents)	Tasks	Minicases
Introduction	Assess own skills and experience as a project manager (T)	Critical success factors of change projects	-	-
Need for change	Find the need for change (T. E. G) Conduct present state analysis (E, G)	Remember this about the need How to communicate the need	Discuss the need for change	-
Analysis	Find out the need for analysis (T, E) Discuss the analysis results (E, G)	How to conduct analyses Assess if analyses are necessary	-	-
Establishing the project	Decide the scope of the project (G) Achieve mutual understanding on the project scope and objectives (G) Assess project risks and opportunities (T, E, G)	How to build up an initial project organisation How to decide project's scope When piloting, remember this (2) In large projects, remember this How to conduct risk analysis (2)	-	Scope definition Project organisation Piloting change
Key persons and project organisation	Identify project's key persons (T, E) Plan the project organisation (T, E) Ensure effective project meetings (T, E) Make a participation plan (T, G)	How to identify key persons How to commit people What does top management support mean in practice How to build up a steering group Steering group composition How to build up a project group Effective meeting procedures How to inform stake holders (2)	Try to ensure the commitment and the support of top management and the entire personnel by these methods Check once more the key persons	Steering group composition Committing vendors Committing customers
Goals and vision	Achieve a mutual understanding on organisation's vision and it's role for the project and its goals (T, E, G) Specify project goals in a group (T, G)	The characters of a good vision How to build up the vision The characters of a good goal How to set goals	Check project goals by the following criteria	Vision Project goals
Project plan	Design the project plan (T, E) Complete the project plan (T, E) Check available resources (G) Discuss the project plan (E, G)	Phases of planning the project Success factors in project planning	-	Making a project plan
Motivation	Find out the best way to motivate people (E, G) Find out ways to achieve fast and tangible results (E, G)	How to set tempting goals Factors affecting project credibility How to empower people Success factors in motivating How to accomplish fast results	Check the degree of motivation Plan informal occasions Ensure results (2)	Motivating by small changes Ensuring fast results
Follow up and control	Monitor tasks (T, E) Monitor by checklists how the project is proceeding (T) Plan and implement metrics (T, G)	Means for follow up and control How to choose metrics Success factors in measuring	Check project goals and metrics by the following criteria	Project follow up methods (2) What to do with measurement
Development groups	Make project meetings effective (T, E) Solve acute problems (G)	How to make teams work effectively	-	An effective project group
Communication	Discuss fears and questions concerning the project (E, G) Make a communication plan (T, G)	Success factors (2) Practical advice for project communication	-	Successful project communication
Training	Make a training plan for the project (T, E) Assess training (T)	What is basic training What is job specific training Success factors in training	-	Training plan
Practical changes	-	Remember this in developing organisations Success factors of team work	-	Difficulties Follow up Implementing teams
Termination	Plan the closing of the project (T, G) Remove the obstacles of consolidation (G)	How to close the project What to do in closing seminar Success factors for termination Ensuring lasting changes (4)	Plan a closing seminar Reward project personnel Ensure lasting results	Arranging closing seminar
Assessment	Assess the project and learn from it (T, E, G)	Different ways to assess the project How to conduct a project assessment (2)	Learn from project assessment (2)	Learning from assessment (2)
Group work methods	-	Remember this when organising group works Phases for "Tuplatiimi" method	-	-
Wall chart techniques	-	How to make the best use of wall charts	Plan how to use wall charts	-

To make the use of the CEG more useful and effective, all of its information is also available in the CD-ROM. In other words, all information from the manual is also in the CD-ROM but not vice versa. The strength of the CD-ROM is the easiness to browse all documents and the possibility to adapt and to tailor each TOOL for the specific needs of each project and organisation. All TOOLS can be modified with the MS Office program it is made by. In addition, existing DOCUMENT TEMPLATES and other TOOLS can be attached to the CEG. All documents are made with MS Word 97, MS Power Point 97 or MS Excel 97 versions. The use of the CEG requires at least a 486 processor, either Windows 95 or NT operating system and a minimum of twenty megabytes disc space. (Further user instructions are available in Appendix 9.)

7.2 Link to existing theory

In order to have a comprehensive picture of the CEG, I browsed through both the manual and the CD-ROM disc several times. That was followed by a careful reading of everything in the CEG and marking which potential success factors of change management found out in the literature review (Chapter 2) every CHECKLIST, TASK, EXAMPLE and TOOL realised. In this way, it was possible to see how much each success factor emphasised in the literature was emphasised in the CEG and to demonstrate that CEG was built on scientific knowledge. For instance, it was then possible to see that there are seventeen (17) different TOOLS supporting and realising participation in the project (Table 33).[31]

The task was not an easy one, as it was not always clear which success factors (both initial and potential) one particular tool or checklist reflected. However, the task became easier by writing detailed descriptions of the characteristics that belonged to each success factor (Table 26, p. 90 and Table 5, p.35). Another technique I applied was to repeat the same process of reading and marking three times having one or two days break in between. The third way of increasing the reliability of the process was to carefully define the principles of counting (see below). Eventually, I was confident of the reliability of the result.

The process of counting and studying the CEG followed the principles below:

TOOLS: A TOOL was handled as one entity, which meant that DOCUMENT TEMPLATES, EXAMPLES and GROUP WORKS were not considered as independent items but as parts of a TOOL. That was possible for the reason that a TOOL always has one particular goal, which characterises all elements in it. However, one single TOOL could represent one or more success factors.

TO-DO LISTS: Each main phase of the CEG begins with a TO-DO list[32]. There are thus fourteen lists, which all together consist of 120 individual bullets, i.e., tasks to be completed. Sub-tasks (one bullet could also contain some detailed sub-tasks) were not counted separately, but they were considered to belong to the main bullet they were decomposed from. Each bullet in a TO-DO list could represent one or more success factors. Thus, e.g., bullet “set short term targets” represented both “will” and “discipline”, as on one hand, short-term targets motivate effectively, but also on the other hand, it is an essential part of monitoring development.

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[31] Note that the literature review and existing theories were introduced already in Chapter 2. For this reason, this chapter does not contain many new literature references but merely links the theories summarised in Chapter 2 with the construct.

[32] Later, in user and expert evaluations (Chapter 7.3), both TO-DO lists and CHECKLISTS are referred as “checklists”, as informants usually did not distinguish one from the other. However, if either type of module was meant by the informant, in particular, it is mentioned in the text.

CHECKLISTS: Each main phase may contain several CHECKLISTS of different nature which, in turn, consist of a various number of bullets. However, as one checklist usually represents one particular task or procedure, e.g., "how to carry out present state analysis", it was consequently related to one success factor, in this case to "ability". All CHECKLISTS that contained specific instructions for completing a particular task were at least linked to the "ability" success factor, regardless of the nature of information in the list.

TASKS: Although altogether 30 separate task bullets for the user of the CEG are grouped into 15 bundles of TASKS, each bullet was considered as a separate entity. Each bullet could also belong to one or more success factors.

MINICASES: All 24 MINICASES could belong to one or more success factors.

The results of the above described process, i.e., CEG's link to existing theory of change and project management is summarised in Table 32 and Table 33. In the first one, the number in each box indicates the total number of modules representing success factors in different phases of the CEG. For instance, the number "2" in the analysis row under "effective communication" column tells that there are two modules emphasising communication in the analysis phase.

Table 32 Sum total of different modules representing success factors in different phases of CEG version 03

	INITIAL SUCCESS FACTORS					POTENTIAL SUCCESS FACTORS															
PHASES	Will	Ability	Opportunity	Discipline	SUM	Purposeful participation	Management support	Effective communication	Control and feedback	Supporting environment	Vision and clear goals	Purposeful planning	Clear need for change	Training	Key persons & organisation	Motivating people	Paying attention to culture	Risk management	Co-operation	Connection with the strategy	Leadership	SUM
Introduction	0	9	0	1	**10**	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	**3**
Need for change	8	1	9	0	**18**	1	2	1	0	0	0	0	9	0	1	3	1	1	0	0	0	**19**
Analysis	4	7	1	1	**13**	3	0	2	0	0	0	0	7	0	0	2	2	0	0	0	0	**16**
Establishing project	5	3	5	24	**37**	6	2	4	1	0	1	11	2	3	0	12	4	8	4	0	1	**59**
Key persons and organisation	10	6	17	16	**49**	12	5	5	3	0	4	0	0	0	13	7	5	0	21	0	1	**76**
Goals and vision	8	11	4	7	**30**	5	0	2	0	0	19	1	1	0	0	1	2	0	0	1	0	**32**
Project plan	6	3	8	20	**37**	5	1	2	2	0	2	19	1	0	0	0	2	1	6	0	0	**41**
Motivation	28	2	1	4	**35**	7	4	5	8	0	5	2	1	1	0	27	5	0	2	0	1	**68**
Follow up and control	8	2	0	16	**26**	1	0	1	19	1	3	0	0	0	0	0	1	0	0	2	0	**28**
Development groups	1	1	1	9	**12**	1	0	0	1	0	1	1	0	1	0	0	0	1	8	0	0	**14**
Communication	9	1	6	4	**20**	4	0	6	2	0	2	2	0	0	5	2	6	1	0	0	0	**30**
Training	0	14	0	1	**15**	0	0	1	0	1	0	1	0	14	0	1	1	0	0	0	0	**19**
Practical changes	2	5	0	2	**9**	1	2	0	3	3	3	2	0	3	0	1	0	0	1	0	1	**20**
Termination	7	2	13	7	**29**	3	1	6	5	14	0	0	0	0	0	0	6	0	0	0	0	**35**
Assessment	1	4	0	9	**14**	1	0	0	2	0	0	1	0	0	0	0	0	3	0	0	0	**7**
Group work methods	0	0	0	2	**2**	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	**3**
Wall chart techniques	0	2	0	0	**2**	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	**4**
SUM	**97**	**73**	**65**	**123**	**358**	**54**	**17**	**35**	**46**	**19**	**40**	**41**	**21**	**22**	**19**	**56**	**35**	**16**	**44**	**3**	**6**	**474**

Table 32 shows that all *initial* success factors (will, ability, opportunity and discipline) are well represented (the first four columns) in the CEG. However, a closer look at *potential* success factors reveal that some weak points also exist, namely cultural, strategic and

leadership issues. Only one module in the entire CEG addresses cultural issues, three modules emphasise the link to the strategy and six modules bring leadership issues to the surface. The weaknesses in cultural and strategic issues are quite understandable since the CEG was designed to be a tool for operative level of organisational and operational change. The main area of interest in the CEG is thus not choosing a strategically correct change project but to plan and implement it effectively and efficiently once it has been chosen (see the scope definition in Chapter 1.3).

The modest emphasis on leadership issues is somewhat more intriguing. Although leadership practices are not the most strongly addressed issues in change project management, they certainly play an important role in the overall project success. (e.g., Holland 1985, 9; Kotter 1988, 5; Turner 1999, 434) Thus, leadership issues could be far more strongly emphasised in the CEG, as well. The challenge, however, of converting leadership into practical tools and instructions at an operative level is considerable, as we are talking about an intangible phenomenon.

According to Table 32, the best represented potential success factors (the sum of all modules over 40) cover both hard project management issues and softer change management issues. Participation, communication and motivation (e.g., Burke 1994, 149; Carnall 1990, 109; Denton 1996, 6; Kotter 1996, 101 and 108; Lewin 1952, 227; Pasmore 1994, 6; Sharrat and McMurdo 1991, 46) are addressed as well as planning, setting goals and controlling the project (e.g., Argyris 1985, 298; Carnall 1990, 99; Denton 1996, 6; French and Bell 1999, 122; Kaufman 1992, 85; Kimmons 1990, 111; Kotter 1996, 76; PMBOK 1996, 39; Turner 1999, 56) To summarise, those potential success factors that are strongly emphasised in the literature are also well represented in the CEG. Moreover, also initial success factors i.e., will, ability, opportunity and discipline are all represented in different phases of the CEG.

Table 33 is similar to Table 32 with the difference that it does not show how success factors are represented in different phases of the CEG but how they are realised by different modules, i.e., TO-DO lists, CHECKLISTS, TASKS, MINICASES and TOOLS. In other words, how the modules in the CEG realise different success factors.

Table 33 Modules in CEG version 03 covering different success factors

INITIAL SUCCESS FACTORS						POTENTIAL SUCCESS FACTORS																
MODULES	Will	Ability	Opportunity	Discipline	SUM	Purposeful participation	Management support	Effective communication	Control and feedback	Supporting environment	Vision and clear goals	Purposeful planning	Clear need for change	Training	Key persons & organisation	Motivating people	Paying attention to culture	Risk management	Co-operation	Connection with the strategy	Leadership	SUM
To-do lists	45	21	35	59	**160**	5	5	21	19	9	15	19	12	6	4	20	0	8	17	0	1	**161**
Checklists	16	28	8	27	**79**	23	10	22	14	7	14	10	5	12	7	18	1	5	12	2	5	**167**
Tasks	13	7	10	8	**38**	3	2	5	2	2	4	0	1	0	4	7	0	0	4	0	0	**34**
Minicases	6	9	2	13	**30**	6	0	3	6	0	3	4	0	2	1	2	0	0	6	0	0	**33**
Tools	17	8	10	16	**51**	17	0	5	5	1	4	8	3	2	3	9	0	3	5	1	0	**66**
SUM	**97**	**73**	**65**	**123**	**358**	**54**	**17**	**56**	**46**	**19**	**40**	**41**	**21**	**22**	**19**	**56**	**1**	**16**	**44**	**3**	**6**	**461**

If read by rows, Table 33 shows which modules are both the best and the worst represented in terms of different success factors. TO-DO lists, CHECKLISTS and TOOLS all cover nearly all success factors. Only management support, cultural, strategic and leadership issues are not totally covered. On the other hand, with MINICASES and TASKS there are larger gaps to be found. However, the objective was not to cover all the success factors by all the modules but to ensure that all the success factors were appropriately represented in the CEG. Again, the most poorly represented success factors concern leadership, strategic and cultural issues.

To conclude, the CEG could clearly be connected to the existing theories in the problem domain. The contents of the construct reflect the important issues and success factors found in the change management and project management literature.

On one hand, the CEG emphasises pertinent features of traditional project management, such as objectives, scope definition, resource allocation, follow up and the assessment of stake holder satisfaction. The characteristics of the project life cycle model are also very distinct and the CEG covers all the phases of planning and implementing changes in organisations.

However, the CEG also supports the distinguishing characters of organisational change and change projects, in particular. Human, motivational and political aspects of the change are salient in the CEG and supported by several modules. For instance, key persons for carrying out the change are identified, much emphasis is placed on personal motivation of all the people in the project, participation and empowerment are encouraged and tools for communication are offered.

7.3 Practical functionality of the construct

The practical functionality of the CEG was studied with twelve case studies (the users of the CEG) and sixteen expert interviews. Before the use of the CEG, training (see the contents of the user training in Table 34) was offered to the users. The objectives of the CEG training were (1) to motivate people to use the CEG, (2) to introduce the contents of the CEG, (3) to make clear how to use the CEG, both the manual and the CD-ROM disc, and (4) to use some parts of the CEG in practice.

Table 34 Contents of the user training on CEG version 03

The phases of training	The contents of the training	Tasks for the trainer
Introduction	• For what purpose is CEG designed? • Objectives of the CEG use • Use of the CEG	• Discussing the role of a project manager • Discussing people's experiences
Contents of the CEG	• Structure of the CEG • Phases of the CEG • Objectives of different phases • Contents of different phases • Modules in the CEG	• Introducing the contents of one phase comprehensively • Introducing different tools in different phases
Introducing the CD-ROM	• Technical details of the CD-ROM • Structure of the CD-ROM • Contents of the CD-ROM • How to use the CD-ROM	• Letting people browse through some tools individually in order to become familiar with the CEG
Rehearsing the use of the CEG	• How to utilise different tools in practice • Reflecting the CEG with people's own change projects, how does it suit them	• Selecting some tools and letting people practice the use of them • Asking people to find one specific tool from the CD-ROM and to fill in the document template according to their own on-going change projects
Summary	• Summarising the results of the training day • Discussing further activities and the use of the CEG • Feedback on the training day	• Distributing and recollecting the feedback forms

Not all users received the same amount and quality of training. Some people had a very thorough and comprehensive training day and some only attended a short introductory presentation on the CEG. The amount of training each user went through is summarised in Table 35.

Table 35 The amount of training on the CEG each user went through

	B2	B4	C1	C2	C3	D1	F1	G1	G2	H1	H2	I1
No training												
Separate training on change projects (4-8 h)	√	√	√		√	√	√	√	√	√	√	√
Basics by an over head projector	√	√	√	√	√	√		√	√	√	√	√
Had the manual at hand during the training		√	√	√		√		√	√			√
CD-ROM was introduced by a data projector		√	√	√		√		√				√
Had a PC terminal in the training								√				√
Received practical training for using the CD-ROM								√				√
Tasks concerning participant's own project were completed								√				√

The training was separately organised for each company and, thus, such people also attended the training who did not have any change project underway. For this reason, the number of cases included in this study was smaller than the number of people that actually received the CEG. Some people did not simply have any project and were just interested in the CEG on a general level.

7.3.1 Amount of use

This chapter sheds some light on the amount and the purpose of the use of the CEG 03 in different cases. Furthermore, the most important factors affecting the amount of use are also discussed, although it was not the main concern of the research. As the question in this chapter is about the real use of the construct, only users' perceptions are reported here. Table 36 summarises the users' own assessments as to how much they used the CEG 03. The use of the CD-ROM is distinguished from the manual. The amount of use is scaled on 1 to 6, number one representing "not used at all" and six "used very much". Light shading indicates the CD-ROM, darker shading the manual and the darkest shading means both.

Table 36 Users' own assessments on the amount of use of the manual and the CD-ROM

	Not at all					Very much
User	1	2	3	4	5	6
B2				BOTH		
B4		CD-ROM	MANUAL			
C1				CD-ROM	MANUAL	
C2				CD-ROM		MANUAL
C3	CD-ROM		MANUAL			
D1		CD-ROM		MANUAL		
F1		CD-ROM		MANUAL		
G1			MANUAL	CD-ROM		
G2	CD-ROM	MANUAL				
H1			BOTH			
H2	CD-ROM			MANUAL		
I1	CD-ROM	MANUAL				
Σ CD-ROM	4	3	1	4		
Σ MANUAL		2	4	4	1	1

Table 36 shows that the manual was in a more active use than the CD-ROM. Four users (C3, G2, H2, and I1) responded that they had not used the CD-ROM at all and only three graded the amount of the use above number three. However, the manual was in quite active use. Six interviewees positioned their use above three and everybody found some use for the manual. Table 37 further elaborates the amount of the use of different phases in the CEG.

> *"I have used more the manual because it is so much easier to use. You just grab it and don't have to fight with the computer." (H2/I)*
>
> *"I haven't used the CD-ROM, at all. I browsed through the manual and used it (irregularly) as a source of ideas." (C3/I)*
>
> *Question: "Have you used the manual or the CD-ROM?"*
>
> *Answer: "I don't know if I'm old-fashioned, conservative or something, but I rather use the manual. The project as a whole is easier to capture and to comprehend in the manual." (G1/03/I)*

Table 37 Amount of using different phases in the CEG (G1 did not answer this question)

	Not at all					Very much	
The phase of the CEG	1	2	3	4	5	6	**N**
Need for change	3	5	1	1		1	**11**
Analysis	3	5	2	1			**11**
Establishing the project		2	3	5	1		**11**
Key persons and project organisation	2	2	2	2	2	1	**11**
Goals and vision	1	2	2	1	4	1	**11**
Project plan	1	3	3		2	2	**11**
Motivation	3	1	1	3	1	2	**11**
Follow up and control	3	3	2	2	1		**11**
Development groups	1	4	6				**11**
Communication	3	2	2	2	1	1	**11**
Training	3	2	4	1	1		**11**
Practical changes	3	3	4		1		**11**
Termination	2	1	2	3	2	1	**11**
Assessment	3	3	2	1	1	1	**11**
Σ	**31**	**38**	**36**	**22**	**17**	**10**	

All phases were used at least by somebody. It is difficult to define which phases of the CEG were in most active use and which, in turn, were neglected. “Analysis”, “Development groups” and “Practical changes”, however, were graded as lowest in terms of the amount of use and “Establishing the project”, “Goals and vision” and “Termination” as highest. Interesting is, that the total number of modules representing success factors (Table 32) was very low in those phases that were not used much. However, it is difficult to confirm a cause-effect relationship between the number of modules offered in different phases and the amount of use of those phases. More likely, the reason for both the more active use of some phases and the larger than average number of modules attached to these phases is that, in the construction phase, those phases were assessed more important for the project success than others. The following table elaborates the use of different modules in the CEG.

> *“What I have used the most is this project planning (phase) and the template, which is included in it. I mean the template for planning the project.” (H1/I)*

Table 38 Amount of using different modules in the CEG

	The amount of the use						
	Not at all					Very much	
Module	1	2	3	4	5	6	N
MAP OF ALL PHASES	1	2	2		3	3	11
TO-DO LISTS	2	1	4	3	2		12
SHORT DESCRIPTION	1	3	4	4			12
CHECKLISTS	1	3	3	4	1		12
TASKS FOR THE USER	1	4	3		4		12
MINICASES	1	4	5	2			12
DOCUMENT TEMPLATES (TOOL)	1	2	3	2	4		12
EXAMPLES (TOOL)	1	5	3	2			11
GROUP WORKS (TOOL)	3	5	3	1			12
Σ	**16**	**31**	**32**	**19**	**16**	**3**	

The most actively used modules according to the questionnaire data were MAP OF ALL PHASES, TO-DO lists, CHECKLISTS, TASKS FOR THE USER and DOCUMENT TEMPLATES. MINICASES, EXAMPLES, and GROUP WORKS were, however, modestly used. Interesting is that the DOCUMENT TEMPLATES were used actively although they were available only in the CD-ROM. Furthermore, different kinds of checklists were popular compared to written text, such as SHORT DESCRIPTIONS and MINICASES.

> *"And when having project meetings, these tables (project meeting templates) are really good." (F1/I)*

> *"There was a good document template for making a concise project plan (project description). I took it and tailored it a little bit according to my specific needs. At first, I filled it out by my self and then I let my project team to approve and discuss it. You see, this project description covers all significant information regarding the project. In my opinion, it is a good summary of the project." (H2/I)*

In an interview or in the "free comments" space in the questionnaire, all (12/12) users explicitly expressed that they had used TO-DO lists and CHECKLISTS and had found them useful. Nine (9/12) respondents had used DOCUMENT TEMPLATES and five of them emphasised the role of project meeting templates, in particular. Some interviewees (e.g., G1) replied not to have used the CEG very much, although they had clearly used the material. This phenomenon raised the issue of "using the CEG". What does it mean in practice? I defined the use of the CEG as any kind of use, that is, from practical use of different TOOLS to capturing new ideas and increasing the awareness of change project implementation. Many users had difficulties with this definition since in those cases where the user had not used TOOLS only available in the CD-ROM, a natural response was not to have used the CEG. A similar kind of situation rose if the user had not used all modules in the CEG but only those ones important to him or her. Also in those cases the amount of use was often considered modest by the user. The above described confusion may explain the finding that although users estimated their amount of use to be moderate, they still considered the use of the CEG very useful and rewarding.

> *"As I have said, I have not used the CEG very much in practice but, anyway, I really like these minicases." (I1/I)*

> *Question: "How much have you used it (the CEG)?"*

> *Answer: "Maybe some project meeting templates but, in general, I have not used it a lot. Just a little. I guess I could have used it more. I could have made more use of it than I have." (G1//I)*

The usual way to use the CEG was first to browse or read through the manual and then to decide which parts of the construct were essential for the project concerned (B2, G1, C3, C4, H1, H2). Checklists and tools were then customised to fit better the need and only those parts were used that had proven or seemed to be useful. The ability to modify all TOOLS was found very important among some experts, too (E17, E23). One user (H1) noted that experienced project managers already had tools and methods of their own and might thus want to use them in conjunction with tools in the CEG. That is, the way to use the CEG was not rigorously to follow the path from beginning to the end and to use all modules along the way. On the contrary, users only chose relevant parts and tailored them for their own purposes. In this way, one of the weaknesses of the phase-models presented in the literature (a change effort is always an unique endeavour and thus cannot be squeezed into a phase model) did not bother the users of the CEG (e.g., Buhanist 2000, 5; Cummings and Worley 1993, 67; Kanter 1992, 372).

> *”If you have previous experience (on change projects) you know what parts to use and how to adapt and customise the product for your own needs. However, if you are just a beginner, you don’t have the experience needed for choosing the most important parts for you. And if that is the case, you just have to follow it (the implementation path in the CEG) and gradually learn that everything is not black and white… if I remember correctly, there is a mention here about the purpose of customising it (CEG) for each project.” (H1/03/I)*

> *”There is so much material in this (CEG) that it is impossible to use everything in one single project. What I do is that I choose those parts and elements most suitable for my projects and use them.” (F1/03/I)*

Two people (B2, E25) thought that the CEG could also be used in other kinds of projects, such as product development and research projects. Furthermore, although the initial purpose was to develop a product for project managers, two respondents (C4, E25) emphasised that the entire development team in a change project should become familiar with the product. This would enhance the positive effect of using the CEG. It was, however, also noted (F1) that the CEG as such could be too comprehensive for the entire project team and thus it should be simplified for their use.

The CEG was considered best for project managers with some experience on change projects and, if that was not the case, training would be a necessity. In addition to users, it was also a characterising opinion among the experts (E15, E17, and E23). One user (H1) also suggested that project managers with only some experience would probably find the product most useful. However, she also noted that if you did not have any experience or knowledge, i.e., preunderstanding of the subject, the CEG alone might not offer you enough support.

> *”The CEG should be introduced and applied as early as possible in a project. It (a successful use) requires real commitment from the organisation. However, also time is needed since it takes some time to familiarise oneself with the product (CEG).” (C1/Q)*

> *Question: ”Could even people without any experience carry out those group works?”*

> *Answer: ”Yes, I had a look at them and, in my opinion, it is possible. It only requires understanding of what the purpose of the group work is in practice.” (E17/I)*

In addition to the amount of use, I was interested in studying the reasons leading either to active or to passive use of the CEG. One question in the questionnaire covered this issue, in particular. That is, users were asked to comment on various reasons decreasing their activity of the use. Table 39 summarises the answers of this question.

Table 39 Users' perception on factors decreasing their own use of the CEG

Potential factors decreasing the use of the CEG	1 = strongly disagree 6 = strongly agree						
	1	2	3	4	5	6	N
CEG would not have helped me carry out the change project	4	5	3				12
CEG did not correspond to my way of carrying out change projects	8	3	1				12
CEG was difficult to use	4	4	1	3			12
The contents were already familiar to me	3	4	3	1	1		12
User training was insufficient		5	1	4		2	12
User support after training was insufficient	2	3	2	2	1	2	12
My organisation did not support the use of the CEG	3	2	2	1	4		12
My organisation failed to make the CEG a part of normal operation procedures	2	2	1		4	3	12
The values of my organisation were not congruent with things emphasised in the CEG	5	3	1	3			12
Other reasons: Reasons that had mostly to do with myself and my situation			1	3	1	4	9

According to Table 39, it is quite clear that none of the users considered low potential usefulness of the CEG a very significant factor decreasing the use of the construct[33]. Neither was the contradicting or wrong emphasis in terms of the contents the reason for a modest use. Nor did poor usability or too familiar content remarkably decrease the use of the CEG. However, some respondents considered both training and the user support after the training a significant cause for decreased use and, further, seven users strongly (graded 5 or 6) felt that their organisation failed to make the CEG a part of normal operation procedures which, in turn, made their use of the construct more passive. Reasons that had mostly to do with the user him or herself were, however, the most significant reasons for decreasing the use of the CEG. Personal reasons were of various kinds in nature, such as, having already routines of his/her own (I1), lack of time (B2, B4, C2, and C3) and wrong timing of introduction (B4, C1, and C3).

> *Question: Was there anything in the contents of the CEG that might have negatively affected your amount of using it? For instance, anything you disagreed about?*
>
> *Answer: No, really, the contents were good and didn't decrease my amount of use…had the CD-ROM been more user friendly, I would have used it more. The easier it is to find things, the better it is. (H1/03/I)*
>
> *"I don't think the time is right for everybody in our organisation to use the CEG. A systematic way of handling things and documenting projects is not familiar to everybody. There is nothing wrong with the product itself but it is just the timing that is a critical success factor in disseminating and adopting a new product. If you start pushing many new things at a wrong moment, you may only loose. I see that one of the basic factors in the whole thing is changing and altering attitudes, which in turn takes a lot of time. People need some time to digest new things. I believe that also with this (CEG), it is not only a matter of this particular moment but people will gradually increase the use of it and also start using it more systematically." (H1/03/I)*

[33] Note that this table particularly examines factors causing a decreased use of the CEG. Thus it does not explicitly explain about the product or the dissemination process itself. For instance, although the third row "CEG was difficult to use" is graded low, it does not necessarily mean that the CEG was easy to use; it only explains that at least the difficulty to use the CEG did not decrease the use of it – regardless of the fact if the CEG was difficult to use or not. Of course, if most of the users considered "difficult to use" not a significant factor in decreasing the use of the CEG, it also implies that the CEG was not perceived to be very difficult to use, either.

Interview data together with answers to open questions in the questionnaire[34] reveal that the most significant factors decreasing the use of the CEG have something to do either with personal and situational factors or implementation policies and practices. Nobody mentioned that poor contents had anything to do with the activity of using the CEG. Even the one who felt that the CEG was not very useful in terms of his needs (B4), addressed that he did not need the product much due to bad timing of introduction. Four users (B2, B4, H1, and I1) mentioned that poor usability or user friendliness of the product had affected their amount of use. Two of these had some technical difficulties with the CD-ROM, one replied that there was too much material in the CEG and the fourth one had only a general comment on the issue. In two of the above mentioned cases (B2, I1) usability decreased the use significantly. However, the comments only applied the CD-ROM – not the manual.

Lack of time seemed to be one of the most significant factors decreasing the use of the CEG. In seven cases (B4, C2, C3, D1, F1, G1, and H1), the user mentioned having difficulties organising time for learning to use and thus using the CEG. Lack of time is often a result of something else, e.g., organisational support, being wrong.

> *Question: "What is then the reason for inactive use of the CEG?"*
>
> *Answer: "Well, it is a difficult question. Maybe I just should start using it more actively. I don't know the reason." (G1/I)*

In addition to lack of time, implementation policies and practices were on the surface in interviews. In seven cases, the user would have needed stronger support either as tangible management behaviour and incentives (C2, F1, G2, and H1) or as more efficient user support, i.e., training and on line support (C2, D1, F1, G1, H1, and I1). DI and H1 rationalised the need for training by the fact, that you probably only use those parts in the CEG that are familiar to you.

> *"It would be very useful to organise some more training days (to learn more about the use of the CEG). They should be longer than only one day since I don't think one day is enough. During the training days, people should be offered a change to discuss user experiences and to try new modules and tools in practice." (C5/I)*

Interview data also reveal that in four cases (B2, C2, H1, I1) users' old customs, habits and routines acted as obstacles for more active use of the CEG. In all these cases, the user was a very experienced change project manager who had already developed some tools of his or her own and routines to follow. Other factors mentioned as decreasing the amount of use were bad timing (B4, C3, C1), laziness (C3, G1), cultural factors (F1, H1) and researcher's active role in the project implementation (G1, G2).

The question of factors affecting the use of the CEG was further examined by cross case analysis, which is summarised in Table 40. Descriptions (e.g., high-intermediate-low) are taken from within case analyses in Appendix 10. Explanations for the titles in the left-hand side column are also offered in the same Appendix.

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[34] These results reflect users' opinions about factors that affected their activity to use the CEG in the particular project they carried out with the help of the CEG. Therefore, these are not users' perceptions on factors affecting the success of innovation implementation, in general – although many users did have opinions on that, too.

Table 40 Cross case summary of the amount of using the CEG version 03

	C1	C2	G1	H2	I1	H1	B2	D1	F1	B4	G2	C3
AMOUNT OF USE	Active	Active	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Passive	Passive	Passive
User's experience	Inexperienced	Experienced	Experienced	Intermediate	Experienced	Experienced	Experienced	Experienced	Experienced	Inexperienced	Intermediate	Inexperienced
Project scale	Large	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Small	Medium	Large
Perceived contents	Good	Good	Good	Intermediate	Intermediate	Intermediate	Good	Intermediate	Intermediate	Intermediate	Fair	Fair
Perceived usability	High	High	High	High	Intermediate	High	Intermediate	Intermediate	Intermediate	Intermediate	Low	Intermediate
Answering needs	High	High	High	High	High	Intermediate	Low	Intermediate	High	Low	N/A	Intermediate
Implementation policies and practices	Intermediate	Intermediate	Strong	Intermediate	Weak	Intermediate	Weak	Intermediate	Intermediate	Weak	Strong	Weak
Training	Intermediate	Intermediate	Thorough	Intermediate	Thorough	Intermediate	Weak	Intermediate	Weak	Intermediate	Intermediate	Weak
Value fit	High	High	High	Intermediate	High	Intermediate	Intermediate	High	Intermediate	Intermediate	High	High
Quotation describing the use of the CEG	I have used many different modules and phases, yet not very systematically.	Three first modules I used were motivation, communication and this key persons thing.	I have used some project meeting templates but I have not used it (CEG) a lot. I could have made more use of it.	I have only used the manual, it is easier to use. You just grab it and start using - no hassling with a computer.	I wouldn't say I'm a passive user…I have used it quite a lot, but only some modules and only for some purposes	I used this project planning material and document templates. I knew what parts to use and how to customise the product.	I mainly used the CEG as a reminder and a checklist.	I have used those TO-DO lists, checklists and other tools before project meetings.	I just picked up the parts I needed.	I mainly used CEG as a reminder, a source of ideas and an aid for meeting preparation.	Only a few people in the project use it (CEG).	I have not used the CD-ROM, at all. I browsed through the manual and used it (irregularly) as a source of ideas.
Factors decreasing the use	Insufficient support and training, wrong timing	Lack of time, insufficient support, own habits and routines	Lack of time, laziness, insufficient training, researcher's active role	Wanted things on paper, not on computer files	Own routines, technical difficulties, insufficient user support	Own experience on change projects, too little time for learning to use	Low user friendliness and own habits	Insufficient training and user support, lack of time, wrong timing	Insufficient user support, lack of time, computer capacity, culture	Wrong timing, lack of time, difficult user interface (CD-ROM)	Insufficient pressure and support, researcher's active role, facilitating role	Lack of time, no suitable project, laziness
Project type	Individuals, structures and systems	Individuals, structures and systems	Operations	Individuals Structures and systems	Operations, structures and systems	Operations, structures and systems	Structures and systems, operations	Operations, structures and systems	Structures and systems	Individuals, operations	Operations	Individuals, structures and systems
User's title and responsibilities	HR Manager	Quality Manager	Managing Director	HR Manager	Develop-ment Manager	Quality Manager	Project Manager	Consultant	Managing Director	Department Manager	Production Manager	Product Manager

Exploring Table 40 should shed some more light on the use of the CEG and on the factors affecting the use of it. First, no pattern between the user-CEG value fit and the amount of using the construct could be found (compare Klein and Sorra 1996, 1055). Further, modest and active users carried out the same kind of projects measured by size and type. Nor was the experience of the user strongly related with the amount of use as quite experienced project managers and beginners belonged both to active and passive users of the construct.

The perceived characteristics of the CEG, that is, the contents and the usability of it, combined with CEG's ability to answer user's needs had something to do with the amount of using the CEG. Another factor connected with users' activity was user's general job responsibilities in the organisation and some other situational and user-dependent factors, such as timing of introduction and personal time available for becoming familiar with the CEG.

Both active users (C1 and C2) perceived the contents of the CEG to be good, the usability of it high and its ability to answer their needs high. On the other hand, all passive users fell in intermediate, fair[35] or low categories in contents, usability and CEG's ability to answer user's needs. In other words, passive users did not find the CEG so useful for their acute needs and purposes. The value fit between the organisation and the product was high in active cases, yet it was also high in two cases out of three in the passive case group.

A closer look at implementation policies and practices (training excluded, see Klein and Sorra 1996, 1060) reveals interesting issues. That is, in two cases out of three among passive users the implementation policies and practices were weak. In case G2, however, they were strong and still the amount of use remained passive. The user in case G2 was not the project manager in the project (G1 was) and, thus, the need for using the CEG remained relatively low. Another interesting case was B2: weak implementation policies and practices did not cause passive use in his case. B2 was personally very interested in development tools and an enthusiastic developer of organisations. In terms of organisational change, he had been a "lone rider" in his organisation for a long time. Therefore, weak support did not prevent him from using the CEG, either.

I do not draw any conclusions on causal relationships between different variables, as in practice it is very difficult to distinguish ones. Furthermore, it is not the main issue of the study. The reality that two factors exist at the same time does not tell much about their cause-effect relationship. Neither does it indicate the order of a potential relationship, i.e., the existence of which factor causes the existence of another. Were the contents of the CEG perceived good and the product user friendly because it was used a lot or vice versa? Maybe an active use of the CEG made the construct useful and gave a good impression of its contents and usefulness. As B2 (03/Q) noted "If I have graded the usefulness of some modules or phases low, it is only because I did not use them". B4 also addressed that "more active use would have made the product more useful". Moreover, H1 (03/I) said "Now that I have become familiar with the product, I think that in the beginning of every single project you should first go through this (CEG)." In addition, D1 put it like this: "After starting to use the CEG, its contents became more and more useful." (D1/03/Q)

[35] The words describing the perceived contents of the CEG are good-intermediate-fair, i.e. "low" or "bad" is replaced by a more positive word "fair". In order to distinguish one case from another in terms of the perceived contents, I had to check and redefine the criteria of grading, i.e. to make it harder to earn grading intermediate or good. For this reason, it was not meaningful to use word "bad", as it did not reflect the perceptions of the users.

If there is a relationship between the amount of the use and perceived contents, usability or usefulness, it seems to be the increased amount of the use that causes increased positive perceptions on the contents, usability and usefulness of the CEG. This is supported by user's direct quotations and by the fact that neither interview, nor questionnaire data showed any significant evidence in favour of either bad contents, poor usability of low usefulness to cause a decreased use of the construct. B4 did mention difficult user interface in the CD-ROM and I1 had technical difficulties with it, but, according to them, these issues did not remarkably affect the amount of using the CEG.

Implementation policies and practices, value fit, project scale and type and users experience and responsibilities (title) may all be causes for either active or passive use. I already discussed the potential meaning of implementation policies and practices. A couple of the following paragraphs discuss user related factors, i.e., user's experience and responsibilities.

On one hand, none of the active users had direct line responsibilities (a quality manager and a development manager) and, on the other hand, all passive users did. Moreover, all middle managers with strong line responsibility belonged to the passive user group. Both managing directors (small companies) with both line and development responsibilities belonged to intermediate users. This finding implies that user's responsibilities in the organisation, in general, are somehow connected with the amount of using the CEG. If developing your organisation belongs to your main responsibilities, you are probably also interested in using new tools that may facilitate your job. However, in those cases, you are also most likely interested in all things related to change management, in general.

Line managers with a strong focus on daily operations did not use the CEG as much the others. Lack of time, wrong timing, laziness, insufficient pressure and support were the factors these users defined decreasing their use of the CEG. They did not have much time for learning to use new tools – neither did they feel that their surrounding organisation supported or encouraged investing time on adopting the CEG. They simply had many other, more important and acute things to do.

Users' own perceptions on factors decreasing their amount of use are of great value. I was particularly interested in those cases, where the CEG had been used passively. In these cases (B4, C3, G2), the main factors (according to the users) decreasing the use of the CEG were wrong timing and lack of time (B4, C3) and user's facilitating role in the project (G2).

7.3.2 Contents of the construct

Next, we will have a closer look at the contents of the CEG, i.e., how the contents were perceived, in general, and how useful each individual phase and module was considered. The usefulness of the CEG is discussed in Chapter 7.3.4.

Table 41 distinguishes the perceived contents of the manual and the CD-ROM. Both items were considered very informative and successful, what comes to the contents of the product. As only eight people had used the CD-ROM, the number of respondents is lower. Altogether, twenty grades were given on the perceived contents of the CEG (the sum of 12 and 8), eleven (11/20) of them were number five's and only two (2/20) were under four. This gives quite a solid picture of the perceived contents of the CEG.

Table 41 Perceived contents of the manual and the CD-ROM

	Total failure (1)					Very successful (6)	
	1	2	3	4	5	6	N
Manual			1	4	7		12
CD-ROM			1	3	4		8
Σ	0	0	2	7	11	0	

Table 42 sheds some more light on the contents of the CEG, perceived by users. Different phases are placed in the middle, the amount of use on the left-hand side[36] and the perceived benefits of using each particular phase on the right hand side of the table. All information is user's estimates. In case somebody had not used a certain phase at all, i.e., marked number "1" on the left hand side, nothing was marked on the benefit side of the table. By doing this, it was possible to distinguish those phases that had been used and still not perceived useful at all. In one case (C2), the project manager had used (graded as 2) "Follow up and control" but still, did not find that phase useful.

Table 42 Use and the benefit of different phases of the CEG 03 perceived by users (G1 did not answer the question)

Amount of use								Perceived benefit of the use						
Not at all (1) - Very much (6)								No at all (1) - Significant (6)						
N	1	2	3	4	5	6	Phase	1	2	3	4	5	6	N
11	3	5	1	1		1	Need for change		4	1	1	1	1	8
11	3	5	2	1			Analysis		5	1	2			8
11		2	3	5	1		Establishing the project		3	1	4	3		11
11	2	2	2	2	2	1	Key persons and project organisation		2	2	2	2	1	9
11	1	2	2	1	4	1	Goals and vision		1	3	3	3		10
11	1	3	3		2	2	Project plan		2	2	3	3		10
11	3	1	1	3	1	2	Motivation			2	3	2	1	8
11	3	3	2	2	1		Follow up and control	1	1	2	4			8
11	1	3	7				Development groups		4	4	1	1		10
11	3	2	2	2	1	1	Communication		2	2	1	3		8
11	3	2	4	1	1		Training			5	3			8
11	3	3	4		1		Practical changes		1	4	3			8
11	2	1	2	3	2	1	Termination			1	6	2		9
11	3	3	2	1	1	1	Assessment		1		5	1	1	8
Σ	31	37	37	22	17	10		1	26	30	41	21	4	

The users found it quite difficult to give detailed comments on some specific phases or individual tools in the CEG, as in one project you need something and in another something else. In particular, when asked to specify things that were useless in the CEG, a common reply was that nothing was useless and he or she just did not need everything in that

[36] The amount of use was already described in Table 37. However, since the users were specifically asked to assess the benefits of different phases and modules in that particular project they were implementing, it was appropriate to put the amount of use and the perceived benefits in the same table.

particular project. Only H2 and D1 commented that there was much too much material, in general. Some users, however, were also able to identify their favourite modules.

> *"In my opinion, they (meeting tools) are really good because they foster doing things right and properly. Furthermore, it is really worth while recalling all tasks that should be completed. The meeting is thus not just talking and chatting but everybody knows what to do." (C1/03/I)*

> *"As you may also have acknowledged, there is a lot of stuff in here which you may not need in your particular project. However, in some other project you might need it…projects are different and it depends on the project and the person (user of the CEG) what is useful and, accordingly, what will be used (in the CEG)." (H2/03/I)*

For experts, it was easier to point out the phases and individual modules in the CEG they found the best (Table 43). Ten (10/16) experts (E10, E12, E14-E19, E21, E23) found risk analysis (Check the description of the contents of different modules in Table 31) both, important in general, and well realised in the CEG[37]. Planning earned seven (E11, E13, E15, E16, E17, E21, E22) positive remarks, participation (E11, E16, E17, E21, E22, E24) and motivation (E10, E11, E14, E15, E21, E22) both six and top management support five (E10, E15, E16, E19, E23). Other less often mentioned modules were follow up (4/16) and project assessment (4/16). To summarise, experts perceived both softer change management sides (e.g., motivation and participation) and harder, traditional project management related modules (e.g., risk management and follow up) good in the CEG.

[37] Many times, when interpreting expert interviews, it was difficult to distinguish experts' general opinions on successful change project implementation from their perceptions on the CEG, in particular. For this reason, I only approved those comments, which clearly referred to the CEG. For instance "risk analysis is important" was not counted as a positive comment on the CEG, but only as a general opinion on change projects and, thus, not very interesting for this study.

Table 43 Strengths and weaknesses in the contents of the CEG perceived by the experts

	Exceptionally good in the contents of the CEG	Exceptionally good modules in the CEG	Weaknesses and area for improvement in the contents of the CEG
E10	Follow up, motivation, organisation, risk management, top management support	N/A	Miss: material on IT projects More: participation Too much planning and preparation
E11	Fast results, motivation, participation and key person analysis, planning, roles	Map of all phases	More: discussion on resources
E12	Analysis, project assessment, risk management	TO-DO lists, checklists	Too much material Miss: follow up after the project Miss: Material in English
E13	Project assessment, follow up, planning	N/A	Too much material More: communication
E14	Establishing the project, follow up, motivation, piloting, risk management	N/A	More: roles
E15	In general, good contents Project assessment, documentation, goals, motivation, planning, risk management, top management support, training	TO-DO lists, checklists, templates, examples	More: customer needs, communication, consolidating changes, launching the project, group dynamics and roles
E16	In general, right kind of things Organisation, participation and key person analysis, piloting, planning, risk management, top management support	Map of all phases, examples	More: top management support
E17	Good and comprehensive contents Establishing the project, participation and key person analysis, planning, risk management, defining roles	Minicases, examples, templates, group works	More: material on communication
E18	Concrete, tangible and simple contents Risk analysis	Templates, group works	N/A
E19	Risk analysis, top management support	Templates	More: the pre project phase
E20	In general, important things	N/A	Miss: material also in English
E21	Project assessment, goals, motivation, need for change, participation and key person analysis, piloting, planning risk management	Checklists, templates	More: communicating goals
E22	In general, very practical and good contents Follow up and control, motivation, need for change, participation and key person analysis, planning	Checklists, templates, tools in general	Miss: material also in English More: motivation
E23	Risk management, top management support	Checklists	More: leadership qualities
E24	Participation and key person analysis	Templates, tasks, group works	More: leadership, participation
E25	Participation (and empowerment)	All modules are important, checklists, templates, tasks, group works, map of all phases	More: definitions for words and phrases More: leadership and change management material More: after project situation, how to keep it all running after the project? More: background and reasoning, not only lists

Experts also had more comments on potential improvement areas in CEG's contents. These comments were, however, very detailed and thus it was not meaningful to report them here. Four (E13, E15, E17, E21) experts would have put more emphasis on communication. Three (E12, E13, E22) considered the CEG a little bit too comprehensive. However, they did not suggest anything specific to be left out in the future. Three (E12, E20, E22) suggested that the material should also be in English, as many international organisations operate mainly in that language. Other comments were about putting more emphasis on some phases and modules, such as motivation, roles and top management support. Nothing was considered useless in the CEG and very little was also totally missing. However, one expert (E10) would have added material on IT projects, in particular and, another (E12) missed material on follow up after the project termination. The one who addressed the importance of IT issues worked for a consulting company that implements new IT systems.

> *"However, nowadays all remarkable and significant transformation efforts include investing in IT systems. They act either as enablers or as implementation tools but, anyway, the biggest investment is placed in designing, implementing and adopting new IT systems. This kind of approach is not available in it (the CEG). The essential role of IT systems is quite apparent in radical changes in business, yet it is not clearly pointed out (in the CEG)." (E10/03/I)*

> *"Yes, I did fill it out (project manager's self assessment form) and, to be honest, it is quite difficult to use. I suggest that you discuss about it with somebody who has made more of these kinds of forms as you easily enter and interfere with dangerous and sensitive areas. Some times, you find (and fill out) these kinds of questionnaires which at least for me give a catastrophic result and you think you should shoot yourself. I mean, you have to think over the purpose and the objective of it…you also have to give answers and advice for sensible actions." (E23/03/I)*

> *"Concerning project manager's responsibilities, it is worthwhile to think if he or she should really be responsible for all things mentioned (in the CEG). In most cases, he or she does not have the authority to interfere with line organisation's matters. However, the project manager is accountable for meeting project's schedule." (E14/03/I)*

The next table (Table 44) elaborates both the amount of use (left) and perceived benefits (right) of using different modules in the CEG. MAP OF ALL PHASES was both used a lot and perceived useful in practice. TO-DO lists, other CHECKLISTS and DOCUMENT TEMPLATES were also considered profitable to use. Otherwise, based on Table 44, it is difficult to distinguish which modules were perceived to be exceptionally good. All modules that were used were also found useful – at least to some extend.

Table 44 Use and the benefit of different modules in the CEG version 03 according to user's opinions

Amount of use								Perceived benefits of the use						
Not at all (1) - Very much (6)								No at all (1) - significant (6)						
N	1	2	3	4	5	6		1	2	3	4	5	6	N
12	2	2	2		3	3	Map of all phases		1	2	3		4	10
12	2	1	4	3	2		TO-DO lists			1	5	3	1	10
12	1	3	4	4			Short description		1	3	4	3		11
12	1	3	3	4	1		Checklists		1	1	4	4	1	11
12	1	4	3		4		Tasks for the user		2	4	2	3		11
12	1	4	5	2			Minicases		2	4	5			11
12	1	2	3	2	4		Document templates (tool)		1	3	3	4		11
11	1	5	3	2			Examples (tool)		3	2	5			10
12	3	5	3	1			Group works (tool)		2	4	3			9
Σ	13	29	30	18	14	3			13	24	34	17	6	

The interview data corroborates the value of a rough phase model (MAP OF ALL PHASES) for carrying out the project and different kinds of checklists attached into different phases of the model. Ten (not C3 and G1) users said that checklists, i.e., TO-DO lists and other CHECKLISTS, were exceptionally good in the CEG. Seven (C1, C3, D1, G1, F1, H1, H2) mentioned that DOCUMENT TEMPLATES were good, in particular and five (B2, C3, G1, H2, I1) replied that the MAP OF ALL PHASES was especially good, e.g., for keeping the whole picture of the project in mind all the time. One more quite frequently mentioned module was MINICASES: five (B4, F1, H1, H2, I1) users regarded them very good. What makes this last finding more interesting is that the most experienced project managers (H1 and I1) both mentioned MINICASES, in particular.

> *"In my opinion, these are particularly good, these checklists, I mean…if I can answer to all these questions, I know I am doing the right things…I have read quite a few minicases since we are constantly looking for new ways to develop the organisation. No matter how much you read different theories, the core idea and ways to apply them for your own purposes does not always become clear. In that sense, minicases are really good." (H1/I)*

> *"This is a typical checklist. It contains trivial things and yet it is useful as those things are often forgotten under daily routines." (I1/03/I)*

Experts perceived DOCUMENT TEMPLATES better that other modules. Eleven experts out of sixteen had some opinion on the usefulness of different modules and seven (E15, E17, E18, E19, E21, E22, E24) of them considered DOCUMENT TEMPLATES good and useful. CHECKLISTS were especially mentioned to be good by five experts (E12, E15, E21, E22, E23), EXAMPLES (E15, E16, E17) and GROUP WORKS (E17, E18, E24) by three, MAP OF ALL PHASES by two (E11, E16) and TASKS (E24) by one expert. Experts, who were mainly consultants and trainers, found practical tools and templates the best, not e.g., the MAP OF ALL PHASES which most of the users found very good. Maybe experienced change management consultants took phase models for granted and thus they were not seen to be very useful or "good" as it is put here. Both experts and users considered all kinds of checklists good.

> *"I have also used (although he was an expert) examples and minicases (with our customers) but they had too much influence on people's way of thinking. However, the way you had constructed them was more useful. You should definitely keep them there (in the CEG). We have used them as they make the issue you are dealing with much easier to comprehend and to deal with." (E17/03/I)*

> *"In my opinion, all different modules are important. I think that it (the usefulness of a certain module) depends on the experience of the project manager and other project group. Moreover, for instance in the analysis phase, the project manager may need TO-DO lists more than other modules. However, in some other phase, minicases may be more important for him or her. I thus feel that all these modules are important. It is the responsibility of the user to choose those modules most useful for him or her" (E25/03/I)*

User interview data did not put any emphasis on SHORT DESCRIPTIONS, TASKS for the user, EXAMPLES or GROUP WORKS. EXAMPLES and GROUP WORKS were not used very much, which may have affected the perceived benefit of those modules. According to questionnaire material, SHORT DESCRIPTIONS and TASKS for users were used to some extent and were found quite useful. However, they were presumably not considered as good as other modules and, thus, not mentioned in interviews, in particular. Table 45 summarises the contents of the CEG perceived by the users in the case organisations. The first row, "perceived contents" is a summary of different data sources and represents also users' general perception on the contents of the CEG – not only CEG's fit to the project he or she was implementing or had just carried out. "Answering the needs" row indicates CEG's ability to offer help for the particular project the user was managing at the time of using the CEG.

Table 45 Cross case summary of the perceived contents of the CEG version 03

	G1	C2	C1	B2	F1	H2	I1	D1	H1	B4	C3	G2
PERCEIVED CONTENTS	Good	Good	Good	Good	Intermediate	Intermediate	Intermediate	Intermedi-ate	Intermediate	Intermediate	Fair	Fair
Answering needs	High	High	High	Low	High	High	High	Intermedi-ate	Intermediate	Low	Intermedi-ate	N/A
The amount of use	Intermediate	Active	Active	Intermediate	Intermediate	Intermediate	Intermediate	Intermedi-ate	Intermediate	Passive	Passive	Passive
User's experience	Experienced	Experienced	Inexperi-enced	Experienced	Experienced	Intermediate	Experienced	Experi-enced	Experienced	Inexperi-enced	Inexperi-enced	Interme-diate
Project scale	Medium	Medium	Large	Medium	Medium	Medium	Medium	Medium	Medium	Small	Large	Medium
Sentence or quotation describing user's perception on the contents	I mean, these things here are very important. For instance, setting goals and motivating people.	The CEG contains things worth thinking over, such as, motivation, communication, need for change, risk management and assessment.	Meeting templates are really good: they foster doing things properly.	There should be a more practical tool for scheduling and documentation. Otherwise, the product is excellent.	When having project meetings, these tables (project meeting templates) are really good.	This may even be too com-prehensive for some projects but, of course, people may need different kind of support.	This is a typical checklist: it contains trivial things and yet it is useful since they are easily forgotten.	Good and useful stuff, but maybe too much.	Checklists are very good, although I know there is nothing new in them. By following them, I now I am doing the right things.	Checklists are good and the product is clearly based on practical experience.	Well, there are good tools for supporting the project.	N/A
Exceptionally good in the CEG	Map of all phases, templates	Critical success factors, in general	Almost everything, checklists, tools, templates	Map of all phases, checklists	Checklists, templates, minicases, project mgmt. tools	Manual in general, checklists, minicases, templates	Minicases, map of all phases, TO-DO lists, metrics, termination	Checklists, templates	Minicases, checklists, templates	Checklists, minicases	Map of all phases, meeting templates	Check-lists
Things that were missed	Nothing	Ensuring real top mgmt. Support	Nothing	Scheduling tools	Nothing	More minicases	More minicases	Nothing	Nothing	Nothing	Nothing	Follow up
Useless material	Nothing	Nothing	Nothing	Nothing	N/A	Nothing	Nothing	Too much material	Nothing	Nothing	N/A	N/A
Project type	Operations	Individuals, structures and systems	Individuals, structures and systems	Structures and systems, operations	Structures and systems	Individuals, structures and systems	Operations, structures and systems	Opera-tions, structures and systems	Operations, structures and systems	Individuals, operations	Individu-als, structures and systems	Opera-tions
User's title and responsibilities	Managing Director	Quality Manager	HR Manager	Project Manager	Managing Director	HR Manager	Development Manager	Consultant	Quality Manager	Department Manager	Product Manager	Produc-tion Manager

The contents were perceived very good by the users, nothing essential was missing and nothing useless was included (Table 45). Seven users (B4, C1, C3, D1, G1, F1, H1) explicitly replied that nothing essential was missing in the CEG. Two users (H2, I1) would have liked to see more MINICASES, two (B2, G2) would have needed more project management tools, e.g., for monitoring and control or for scheduling, and one (C2) would have placed more emphasis on ensuring real top management support.

> *"There should be more practical tools for scheduling and documentation. Otherwise, the product is excellent." (B2/03/I)*

Although the CEG is very comprehensive, nobody could point out any specific phase, module or other item that was useless or otherwise incorrect in terms of the information. Although I tried to push some users to distinguish useless parts in the CEG, they were not able to. Users saw that much was useless for one single project but in order to be useful as a generic construct, it must also be comprehensive – and easy to modify for own purposes.

Those who found that the CEG had answered their needs related to their project also perceived the contents of the CEG good. B2 was an exception, as the contents of the CEG were not very suitable for the project he was carrying out (no sophisticated scheduling tools). Still, he perceived the contents very good. Those project managers who considered the contents of the CEG good had also used it more than those who perceived the contents less good. As discussed earlier, if there is a cause-and-effect chain, it most evidently starts from the amount of use, that is, those who have used the CEG much also perceive the contents of it better than passive users. The challenge is thus to make people use the CEG and, in that way, make them see the potential benefits of using it. An introductory training could be one answer to the above-described challenge.

The contents are suitable for different kinds of projects and for both experienced and inexperienced project managers. However, the users with line responsibilities considered the contents of the CEG worse than those with less line responsibilities and subordinates.

7.3.3 Usability and structure of the construct

This chapter sheds some light on the usability of the CEG 03. Again, triangulation is applied, i.e., data from user interviews, user questionnaires and other case material are analysed and the results are compared with expert interview material. First, Table 46 elaborates users' opinions on the usability of the CEG. In order to obtain a comprehensive picture of perceived usability of the construct, different characteristics such as, easiness to use, structure, clearness, attractiveness, easiness to find information and simplicity, were examined in the questionnaire.

Table 46 Usability of CEG 03 according to user questionnaire (C3, G2, H2 and I1 did not use the CD-ROM)

	Total failure (1)					Very successful (6)	
	1	2	3	4	5	6	N
Easiness to apply the CEG in your own project		1	1	7	2		11
Easiness to modify the material		1	4	2	3		10
Manual	1	2	3	4	5	6	N
Easiness of use			1	3	7	1	12
Structure (the order of which the information is presented)			1	5	5	1	12
Clearness and attractiveness			2	5	5		12
Easiness of finding information			1	5	4	2	12
Simplicity			2	2	7	1	12
Σ	0	0	7	20	28	5	
CD-ROM	1	2	3	4	5	6	N
Easiness to use		2	2	2	2		8
Structure (the order of which the information is presented)		1	1	4	2		8
Clearness and attractiveness		1	3	4			8
Easiness of finding information		1	3	3	1		8
Simplicity		1	2	3	1	1	8
Technical functionality		1	4	1	1	1	8
Σ	0	7	15	17	7	2	

Table 46 shows how the usability of the CEG 03 was perceived. Users thought that it was quite easy to apply the product to their own projects. Only two (2/11) users graded this character under four. However, only two graded it above four. Users were thus unanimous regarding the applicability of the CEG in their own environments. The easiness to modify the material for own purposes received intermediate grading.

The manual, in particular, receive very high estimates in the questionnaire: eight (8/12) users graded the user friendliness and simplicity either 5 or 6 and only seven (7/60) of all given 60 points concerning the usability of the manual were under four. The CD-ROM was not perceived as easy to use and, furthermore, the opinions on the usability of the CD-ROM varied more than those of the manual. One explanation could be previous experiences of working with different kinds of software. For some people, it is easier to start using new versions and totally new programs than for others.

User interview data reveals that ten (10/12; not D1 and G2) users said explicitly that the basic structure and the phase model of the CEG was clear and understandable. Other frequently used words were “analytical” (e.g., C1), “logical” (e.g., B4), “systematic” (e.g., B4) and “tangible” (e.g., H1). Some times the respondent (B4, C3, H1) emphasised that the structure of the CEG was practical and resembled real life projects and situations. According to users, by using the CEG it was easy to capture what the change project was all about. However, although the structure was perceived clear and simple, one user (F1) felt that it was still quite difficult to find those pieces of information you were particularly looking for.

”I mean, this (CEG) is well structure and very useful… this is definitely a good product.” (C1/03/I)

”Checklists are good and the product is clearly based on practical experience.” (B4/03/I)

Question: ”In your opinion, is the language difficult to understand?”

Answer: ”The language is OK. You couldn’t make it any more understandable. In my opinion, it is clear, not only the language but as a whole. There is a good and logical structure. In general, there is plenty of

good in it. That is the reason I don't have that many remarks or comments on it. Yes, I consider it good." (E15/03/I)

What comes to the structure of the CEG, expert opinions are consistent with user evaluations. Half (8/16; E10, E14, E15, E16, E17, E20, E22, E24) of the experts addressed that the basic structure, i.e., the phase model and modules attached to each phase, is successful and works well. The rest of the experts did not have anything against the structure, either. Some people (E14, E16, E20, E22) especially liked the tempting layout and outlook of the CEG, two (E18 and E19) considered it very practical and tangible, or clearly written (E10 and E24). Experts did not distinguish the manual from the CD-ROM but, more or less, considered them as one product. To summarise, experts mostly had positive comments on the usability, yet also some correcting actions were suggested.

"Well, let's say that e.g., usually in project management books, there is not such a clear framework or diagram how different phases are most likely related to each other. On the other hand, certain issues, such as communication, are essential throughout the entire project. Anyway, I think that the structure is good. It contains enough phases, yet not too many and it is easy to comprehend, to manage and to control. Furthermore, the visualisation is carried out well and there is a certain logic in it…Let's say that in my opinion, this if far more clear and logical than any other project management workbook I have seen." (E15/03/I)

"It is very clearly and understandably written and, furthermore, it is precise and exact. I mean, smart people who are able to read can definitely benefit a lot of it. Like I said, it is clearly and well written and it is hard for me to think that it wouldn't also be useful for a person who has never done that kind of thing (change project)." (E10/03/I)

"I could say that, as a whole, it is an extremely good tool, even for challenging project assignments. The structure is good, it is clear and lucid and, furthermore, it contains good examples and rehearsals. It is also well planned and designed." (E17/03/I)

"Project plan does not fit for use as such. At least we would not be able to use it. It should be modified." (E23/03/I)

Four experts (E12, E15, E21, E24) were concerned about the phase model and its use especially in the CD-ROM. Actually, they did not suggest any structural changes but wanted to put more emphasis on explaining to the user that different phases do overlap and, sometimes, you may even need to revert to a phase you have already gone through. Other suggestions concerned changes in the order and emphasis of phases (E11, E15, E17) and the length of some questionnaires and self-assessment tests (E12, E20, E22).

"This (a TO-DO list) isn't necessarily clear for everybody. I mean, this discussing on developing the reward and incentive system by the steering group. Many people may wonder what that really means. That line does mean well and focuses on an essential issue, but it is not clear enough." (E15/03/I)

User interviews revealed one main message about the manual, in particular: it was easier to use than the CD-ROM. Ten (10/12) users had mainly positive comments on manual's structure. Two (D1 and G2) did not have much to say about the subject. Users found the manual visual (C3, D1), easy to read (D1), compact (H1, I1) and refreshing and funny (H2). To summarise, it was well structured, easy to use and enjoyable to read. Some improvement ideas were, however, also brought to the surface: the font size was too small for D1, H1 found it a little bit difficult to find right pages fast and suggested marking the beginning of each phase and B2 noted that some terms were probably not familiar to all users and should thus be explained.

"Although I have a laptop computer, I rather use the manual when travelling, in particular. In those cases, I prefer using the paper format. It gives me more freedom to move, I can bring it along with me when going for a cup of coffee and it allows me to browse it through and to contemplate different things in the manual." (H1/03/I)

Question: "What do you think about the amount of text in the manual?"

Answer: "Well, it depends. There should be a very concise version, but the risk with a very thin and concise manual is that it is not useful, anymore. Therefore, there should also be a more comprehensive and thorough (version/product) in case you want to find out more about a certain subject. Anyway, too thick manual would not be used. People wouldn't have enough time to study the contents of it" (H2/03/I)

Although the manual was used more actively and perceived more user friendly than the CD-ROM, it was emphasised that both the manual and the CD-ROM were needed (B4, C1, F1, H1, H2, I1, E16, E22, E24). That is, the idea of having two separate artefacts, one being very concise and fast to use as a reminder and the other comprising comprehensive material on all pertinent issues on change project management and practical tools for the execution, in particular, seems to be sound (see Chapter 6.2).

User interviews revealed interesting information regarding CD-ROM's usability. That is, users could be divided into two distinguishing groups, those who found the CEG difficult to use or problems with using it (B2, B4, F1, H2, I1), and those who were satisfied with CD-ROM's usability and structure (C1, C2, D1, G1, H1). C3 and G2 did not use the CD-ROM but it did not have much to do with the usability of the product. For this reason, I did not include them in the first user group. In the group with difficulties, four people (B2, C2, F1, I1) had technical problems, e.g., with the link map system and with opening MS Office documents. B2 and F1 also complained that it was difficult to find information in the CD-ROM. The user interface was not clear enough which made it difficult to find those modules you were looking for. It should be possible to see all modules, i.e., their titles at a glance and similar modules; e.g., DOCUMENT TEMPLATES should be in one place and other modules in another place. Related to that, B2 also suggested changing filenames to describe better the contents of the file.

"There are maybe even too many different kinds of document templates (in the CD-ROM). Link maps are difficult to use and they don't work properly." (B2/03/I)

"The structure (CD-ROM) is clear but it is hard to find right tools…the link map is difficult…the manual is easy to use." (F1/03/I)

"I received this CD-ROM just a few weeks ago…This is easy and enjoyable to use. This is very handy because it is easy to carry in a bag and thus is always there when you need it. I believe that this CD-ROM (not the manual) will be the one that is actively used." (D1/03/I)

According to user interview data, five people (C1, C2, D1, G1, H1) were very satisfied with the CD-ROM's usability. According to them, it was easy to use, clearly structured and, further, it was easy to find things in it. They also modified TOOLS in the CD-ROM to meet better their own specific needs. Table 47 summarises user's perceptions of CEG's usability.

Table 47 Cross case summary of the perceived usability of the CEG version 03

	C1	C2	G1	H1	H2	I1	B2	F1	D1	B4	C3	G2
PERCEIVED USABILITY	High	High	High	High	High	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermedi-ate	Low
Amount of use	Active	Active	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Passive	Passive	Passive
Perceived contents	Good	Good	Good	Intermediate	Intermediate	Intermediate	Good	Intermediate	Intermediate	Intermediate	Fair	Fair
Answering needs	High	High	High	Intermediate	High	High	Low	High	Intermediate	Low	Intermedi-ate	N/A
User's age	Young	Young	Young	Young	Young	Middle	young	Senior	Senior	Middle	Senior	Young
User's experience on change projects	Inexperi-enced	Experienced	Experienced	Experienced	Intermediate	Experienced	Experienced	Experienced	Experienced	Inexperi-enced	Inexperi-enced	Intermedi-ate
Training	Intermediate	Intermediate	Thorough	Intermediate	Intermediate	Thorough	Weak	Weak	Intermediate	Intermediate	Weak	Intermedi-ate
User's title and responsibilities	HR Manager	Quality Manager	Managing Director	Quality Manager	HR Manager	Development Manager	Project Manager	Managing Director	Consultant	Department Manager	Product Manager	Production Manager
Factors affecting the use	Insufficient support and training, wrong timing	Lack of time, insufficient support, own habits and routines	Lack of time, laziness, insufficient training, re-searcher's active role	Own experience on change projects, too little time for learning to use	Wanted things on paper, not on computer files	No need due to routines, technical difficulties, insufficient user support	Low user friendliness and own habits	Insufficient user support, lack of time, computer capacity, culture	Insufficient training and user support, lack of time, wrong timing	Wrong timing, lack of time, difficult user interface (CD-ROM)	Lack of time, no suitable project, laziness	Insufficient support, re-searcher's active role, facilitating role
Quotation describing users perception on the usability of the CEG 03	*I mean, this (CEG) is well structured and very useful… this is definitely a good product.*	*By using the CEG, you can find most critical and important issues quickly.*	*The project as a whole is easier to capture and comprehend in the manual…the CD-ROM is also easy to use.*	*Although I have a laptop computer, I rather use the manual, e.g., when travelling… the CD-ROM is logical and easy to use, too.*	*The manual is easier to use – no waiting times or problems… In the CD-ROM you don't find things, you have to wait the computer to operate.*	*N/A*	*There are maybe even too many different kinds of document templates (in the CD-ROM). Link maps are difficult to use and they don't work properly.*	*The structure (CD-ROM) is clear but it is hard to find right tools…link map is difficult…the manual is easy to use.*	*This (CD-ROM) is easy to use and very handy. CD-ROM will be the one that is actively used.*	*The manual is clearly structured and easy to use…easy to find information. CD-ROM is quite difficult to use.*	*The structure (manual) is good and resembles real change projects… visually effective and short enough.*	*N/A*

Table 47 clarifies the possible connection between the perceived usability of the CEG, the perceived contents of it, the amount of using it and its ability to answer users needs in the project he or she had carried out. Again, although these variables are somehow connected, Table 47 alone neither indicates if there is a causal relationship nor the order of causality. Users' own comments imply that the amount of use has influenced on perceived usability and contents – not vice versa. G2 and C3 found the CEG least user friendly, but they still did not think that the usability had had an influence on the activity to use the CEG.

None of the users with only weak training is categorised as "high" with the usability. This result implies that a thorough training makes it easier to use a new construct. Moreover, all those who perceived the usability high were young and responsible for development activities in their organisation. According to my observations, they were motivated to learn new things concerning internal development and to apply the CEG in their environment.

7.3.4 Usefulness of the construct

In this chapter, we will have a closer look at the usefulness of the CEG and its role in successfully carrying out change projects. The main areas of interest are (1) the CEG's ability to correspond to users' needs and to meet their expectations, (2) the perceived usefulness[38] of the CEG, (3) the CEG's potential role in succeeding in the project and, finally, (4) the novelty of the CEG as an artefact for assisting project managers carry out change projects. The focus is placed on the cases (user data) but expert opinions are also included in some places.

First, users were asked to name the three most important things they looked for in the CEG in order to facilitate or otherwise help them carry out the change project at hand. Then they had a chance to rate on scale from 1 to 6 how successful the CEG had been in satisfying their needs on the three issues they named. Things to be rated were not predefined. After receiving the data, I placed users' answers into five different categories: (1) project preparation and planning (planning, preparation, scheduling, current state analysis, setting goals and organising), (2) communication and motivation (training, communicating and motivating personnel), (3) Project termination (terminating the project, consolidating changes and reporting the results), (4) Project management and control (managing the project, follow up and control and risk management) and (5) structures and phases for the project. All but one (G2) named all three things they needed help for and thus thirty-three (11*3=33) different opinions were expressed. In most categories, somebody named two or even three different things, e.g., carrying out current state analysis and setting goals in the category of project preparation and planning.

[38] The questions in the questionnaire concerning the usefulness of the CEG were about CEG's perceived usefulness in that particular project it was used at. Opinions expressed in the questionnaire are thus about the CEG's usefulness in one specific project, not about its potential usefulness in change projects, in general. However, interview data – expert interviews in particular – also contain general perceptions on the CEG's usefulness.

Table 48 Issues and things for which users needed help and estimations how the CEG was capable of corresponding to the needs

	Not useful at all (1)					Very useful (6)
Things that were needed and looked for	1	2	3	4	5	6
Project preparation and planning (B2, C1, F1, H1, H2,)	1		1	3	5	1
Communication and motivation (F1, C1, C2, B4, G1)			1	2	1	3
Project termination (B4, D1, H2, I1, C2, C3)			3	5		
Project management and control (as a checklist) (C3, D1, G1, H1)			2	1	1	
Structures and phases for the project t (C1, C3, G1)				1		2
Σ	1	0	7	12	7	6

People needed help for all different phases of the project from project preparation to implementation and its management and finally for project termination and consolidating changes. In addition to which, support was needed for both softer change management issues, such as motivation and communication and for harder and more traditional project management issues, such as controlling the project. One issue which was mentioned and which is not related to project life cycle was structures and phases for the project (the last line in Table 48). People were looking for some kind of structure for the unclear and difficult challenge they had underway.

One user did not find any help for one of the three things he mentioned. That was B2 who looked for sophisticated project scheduling tools and, due to not finding one, was disappointed. Otherwise, users more or less found the help they needed for carrying out their change project.

In addition to offering help in issues the users considered most urgent for them, the CEG was useful in some other respects. Table 49 summarises users' perceptions on the CEG's usefulness and effect on some other important issues found in different phases of the research.

Table 49 Effect and the usefulness of the CEG in the project in which the user used the construct

	Not useful at all / no effect (1)					Very useful / significant positive effect (6)	
	1	2	3	4	5	6	N
Using the manual		1	1	6		2	10
Using the CD-ROM		1	1	2	1	1	6
Usefulness in carrying out the project		2	4	2	2	2	12
Offering practical tools for project planning	1	1	1	4	4	1	12
Offering practical tools for project implementation	1		4	5	1	1	12
CEG's influence on project's success		1	4	5	2		12
Carrying out the project efficiently and in control		1	6	2	3		12
Remembering and keeping the focus on critical actions			1	3	6	2	12
Preventing problems	1	1	3	3	3	1	12
Offering structure and phases for the project		1	4	2	1	4	12
Help making decisions	1	1	3	5	1	1	12
Saving time and effort	1	1	3	6		1	12
Learning new things about change projects		1	1	5	5		12
Improving organisation's development culture	1		4	4	2	1	12
Σ	6	12	40	54	31	17	

The CEG had quite a steady influence on all factors listed in Table 49. However e.g., in remembering and keeping the focus on critical actions, in offering structure and phases for the project, in learning new things and in offering practical tools for planning, the CEG was perceived exceptionally useful.

> *"In general, you get excellent ideas and hints how to carry out the project. Usually by the time you need the information you have forgotten both the advice and the place you had found it from. Which was the book and which page was it on? By using the CEG, you can find most critical and important issues and, furthermore, when browsing it, you are reminded of various things you should pay attention to." (C2/03/Q)*

> *"The CEG clearly emphasises one very important issue: thinking is essential. I mean that it is wiser first to think over a few things rather than just to rush into the execution. First thinking, then acting." (E21/03/I)*

User interview data reveals that the CEG was perceived useful (e.g., B2, F1, H1, H2, I1). The two main benefits of using the CEG were, however, emphasised. First, CHECKLISTS in particular, helped users to remember all important things in different phases of the project and fostered thinking (B4, C1, C2, C3, F1, G2, H1, H2, I1). The CEG forced to pay attention to things the users would otherwise have forgotten. The users needed security, safety and support for their actions. This potential benefit was also emphasised by experts (E17, E19, E20, E21, E22, E24). The other clear benefit was that the CEG brought structure, systemacy and control to the project (C1, F1, G1, G2, H1, H2). People wanted to comprehend the challenge as a whole and to see all the different issues related to the change effort at a glance (G1, H1, I1 E17, E21). This was particularly brought to the surface also by experts (E10, E16, E17, E19, E20, E21, E22). People wanted to carry out changes in control and a clear structure was one answer to that challenge. Other, not so heavily addressed benefits in the interview data were learning and giving new ideas (B4, C1, C2, C3), avoiding problems (C3, F1, E17) and saving time (F1, H2).

> *"CEG helps you to capture the project as a whole, and works as an aid in implementing and consolidating changes." (D1/03/I)*

"This was my first change project carried out systematically. We will adopt this systematic manner in our future projects, too." (G1/03/I)

"As a matter of fact, now that I have become familiar with the product, I think that in the beginning of every single project you should first go through this (CEG). I have a feeling that a common problem and flaw is trying to launch and carry out the project and development too fast, without sacrificing some time for thinking over the fundamentals of the project – what is the underlying purpose of it, what are the goals and what is the plan for achieving them and carrying out the entire project." (H1/03/I)

When talking about the usefulness of a construct, it is also interesting to assess the success of the projects the construct was used with. In assessing the project success I used five different criteria: (1) did the project cause any evident or even measurable operational results, (2) were predefined goals achieved, (3) was the project terminated on schedule, (4) was the project terminated within the budget and (5) how was the project success perceived by key stakeholders, i.e., customers, top management, project team and other employees (see Salminen 2000, 13-16 and 134-135). The material I used in the assessment was project manager interviews, documentation and discussions with stakeholders. Case G2 was omitted since the project was the same as in case G1.

Table 50 Summary of case project assessments

	G1	H1	C1	C2	I1	D1	F1	H2	B2	B4	C3
Operational results	Yes	Yes	Some	Some	Yes	Some	Some	Some	No	Some	No
Goals met?	Most	Most	Most	Most	All	Most	Most	All	Some	No	No
Schedule met?	Yes	Yes	Yes	Yes	No	No	No	Yes	Dis-con-tinued	No	No
Budget met	N/A	Yes	N/A	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A
Success perceived by key stakeholders	High	High	High	High	High	High	High	Inter-medi-ate	Inter-medi-ate	Low	Low
Overall success	High	High	High	High	Inter-medi-ate	Inter-medi-ate	Inter-medi-ate	Inter-medi-ate	Low	Low	Low

The operational and economic results were assessed in the light of documentation and interview data. "Yes" means that such results were gained and "no", in turn, that no improvement on these areas were detected or they were even negative. The achievement of goals was checked independently from the operational or economic results and described by the words "all", "most", "some" or "no". The schedule, i.e., the close-up date, and budget was reflected against the project plan. N/A in the budget column means that no budget was made or that no data of project costs was available. The success perceived by stakeholders is based on interview data, documentation and informal discussions. The overall success is the combination of all the different evaluation methods. In order to earn the definition "high", either all or most of the goals were met, the project was terminated on schedule and it was perceived successful (high) by the key stakeholders. Low overall success required the following: no or only some goals were met, the project was either discontinued or did not meet its schedule and the success was perceived as low by key stakeholders. (see Salminen 2000, 135)

Four cases were rated as “high”, four as “intermediate” and three as “low” in the overall success. C1 and C2 were categorised as “high” although they produced only some operational results since the objectives of these projects were not directly to change operations. However, operational and economical achievements were obvious in both cases. The overall success of different projects is reflected against other relevant variables in Table 51.

Table 51 The cross case summary on potential factors affecting the overall success of the project

	C1	C2	G1	H1	F1	H2	I1	D1	B2	B4	C3
OVERALL SUCCESS OF THE PROJECT	High	High	High	High	Intermediate	Intermediate	Intermediate	Intermediate	Low	Low	Low
Amount of use	Active	Active	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Passive	Passive
Perceived contents	Good	Good	Good	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate	Good	Intermediate	Fair
Perceived usability	High	High	High	High	Intermediate	High	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate
Perceived usefulness	High	High	High	Intermediate	High	Intermediate	Intermediate	Low	Intermediate	Intermediate	Low
Answering needs	High	High	High	Intermediate	High	High	High	Intermediate	Low	Low	Intermediate
User's age	Young	Young	Young	Young	Senior	Young	Middle	Senior	young	Middle	Senior
Implementation policies and practices	Intermediate	Intermediate	Strong	Intermediate	Intermediate	Intermediate	Weak	Intermediate	Weak	Weak	Weak
User's experience on change projects	Inexperi-enced	Experienced	Experienced	Experienced	Experienced	Intermediate	Experienced	Experienced	Experienced	Inexperienced	Inexperienced
Quotation describing the perceived usefulness	*The product helps you avoid and solve problems in change projects. I don't know any other similar products*	*N/A*	*This was my first change project carried out systematically. This systematic manner we will adopt in our future projects, too*	*These things here are not new. However, the product is useful as we tend to forget things… this is a must for those who want to keep things in control*	*When having project meetings, these tables (project meeting templates) are really useful*	*It is good to have some structure and control in your project as, in practice, you tend easily to forget some very important issues*	*This is a typical checklist. It contains trivial things and yet it is useful as those things are often forgotten under daily routines*	*N/A*	*The success of a project depends on various things, some beyond the purpose of the CEG. However, when correctly used, it provides a good guideline*	*There are no other products for facilitating change projects. It is a good aid for carrying out the project and recalling all significant factors*	*I have not used the CD-ROM, at all. I browsed through the manual and used it (irregularly) as a source of ideas*
Project type	Individuals, structures and systems	Individuals, structures and systems	Operations	Operations, structures and systems	Structures and systems	Individuals structures and systems	Operations, structures and systems	Operations, structures and systems	Structures and systems, operations	Individuals, operations	Individuals, structures and systems
User's title and responsibilities	HR Manager	Quality Manager	Managing Director	Quality Manager	Managing Director	HR Manager	Development Manager	Consultant	Project Manager	Department Manager	Product Manager

In the cases with high overall success, the CEG was used either actively or intermediately. In the case group of successful projects, the usability of the CEG was also perceived as high and the contents, usefulness and ability to answer user's needs as good or intermediate. Project managers in the four most successful projects estimated the influence of using the CEG on project's success as four or five on scale from 1 to 6. However, it is a more challenging task to prove CEG's impact on the success of a project. This issue is further discussed below.

Those projects with low success were characterised either as low/passive or intermediate in the amount of use, perceived contents, usability and usefulness of the CEG. Only B2 had perceived the contents as good in the low success category. However obvious it may appear, I will still not make any inferences on causal relationships between the amount of using the CEG and the overall success of the project - let alone improvements on company economics.[39] Some users also addressed the difficulty of demonstrating and assessing CEG's specific effects on the success of their change projects (B2, B4, C2, H1). I thus had a closer look at the profile of the project manager and the environment he or she was working at.

> *"The success of a change project depends on various things, e.g., the people you have, their personalities etc, beyond the scope and purpose of the CEG. However, when correctly used, it provides with a good guideline (for carrying out the project)." (B2/03/Q)*

The project managers who succeeded well in the project implementation were all young (under 40) and the development of their organisations were one of their main responsibilities. Only G1 also had line responsibilities and direct subordinates. However, he was also the managing director of the (small) company and thus responsible for the development of the organisation. Furthermore, according to my observations, they were all very enthusiastic about learning new things regarding change management and motivated to successfully carry out the project. The implementation policies and practices, which imply how important development work was for the organisation, in general, and how much resources were assigned for development activities, were either intermediate or strong in successful projects.

In the projects with low overall success, the age of the project managers varied from young to senior. Two out of three had heavy line responsibilities and in all cases, the implementation policies and practices in the organisation were weak. In other words, the organisation was not able or willing to allocate resources on CEG's dissemination and adoption which, in turn, implies that developing the organisation was not among the main concerns in the company.

All types of projects, i.e., focusing on individuals, structures, systems and operations belonged to successful and unsuccessful project categories. Furthermore, both experienced and inexperienced project managers had succeeded and failed in carrying out the project.

Other methods I used for assessing the usefulness of the CEG were to study the perceived need for a new artefact, the perceived novelty of it and users' willingness to also use the CEG in the future. The potential novelty of the CEG was also discussed earlier in Chapters 5.3 and 5.4. Users were asked to answer an open question in the questionnaire if they knew any other corresponding constructs and if the CEG had become a product they would use in the future projects. All users responded that they did not know of any corresponding products and

[39] An extreme approach on evaluating the usefulness of the CEG would be assessing it on the basis of its effects on the bottom-line of the company. There are, however, many flaws and difficulties in this approach as there are two very weak points in the chain of evidence. First, it is difficult to demonstrate the effect of one successful change project on the bottom line figure as so many other factors may also play a significant role (see e.g., Salminen 2000, 14) Second, it is also hard to define the role of one product on the success of the project as discussed earlier. For this reason, CEG's influence on the bottom line or even on project's success does not play the main role in evaluating the CEG.

would use the CEG in the future. Table 52 summarises some other relevant answers given in the questionnaire.

Table 52 Users' perceptions on the novelty of and the need for the CEG

	Strongly disagree (1) - Strongly agree (6)						
	1	2	3	4	5	6	N
There is a great need for CEG on the market				4	6	2	12
CEG as a whole is a new product on the market				2	9	1	12
CEG offers new information about carrying out change projects			1	4	7		12
CEG offers new tools for carrying out change projects			2	4	5	1	12
Σ	0	0	3	14	27	4	

Users perceived that there is a clear need for a new artefact, such as CEG, on the market. They also admitted the novelty of the CEG as an artefact offering both new information and tools for carrying out change projects. This is a perception of a very limited number of people, yet the consistency of answers supports the notion of CEG's novelty and peoples need to find and use constructs such as the CEG.

Experts were also consistent about the novelty of the CEG and the demand for it (E15, E16, E17, E18, E21, E22, E23). In the experts' opinion, there are already plenty of tools for project management, in general, but they focus on projects that are more traditional and concentrated on the planning phase of the project, e.g., on Work Breakdown Structure (WBS). Some experts (e.g., E18, E20) had either designed tools for their own use or seen tools for change project management in some large companies specifically designed for their needs. However, the need for an artefact covering all phases and important factors of change projects, in particular, became evident.

> *"And, well, like I said, many organisations are lacking knowledge about this (carrying out change projects). Some organisations have never done it before, and even worse, projects have been carried out poorly, causing only negative experiences and feelings…The problem with existing project management workbooks is that they more or less deal with either building a house or something or installing a new information system…Thus, there is a huge demand on this kind of product on the market… There are no other products clearly enough focusing on and tailored for (organisational) development projects" (E15/03/I)*

> *"There has also been other workbooks, e.g., this one here is a typical example…They are mainly for carrying out Work Breakdown Structure but they also encompass these main issues. I kind of start wondering what is the value added by this (the CEG). All right, in project management courses you use some individual tools separately and unrelated with the whole project context. In that sense, this kind of holistic view and handling a project as a whole is missing (in the existing products). There are no other packages offering all you need (for change project implementation)… Maybe the real value of this kind of path is that in all phases there are links to some tools instantly helpful for you to proceed (with the project)." (E23/03/I)*

8 SUMMARY AND CONCLUSIONS

Chapter 8 sums up the findings of the research and answers the research questions.

First, the findings of the testing phase are summarised and reflected against the main initial methods for fulfilling the criteria for a good construct (see Chapter 6.2, Table 25). The comparison gives an idea of how successful were the presumptions of the contents and the structure of a well functioning construct. That is followed by checking if the initial criteria for the construct were fulfilled (see Chapter 6.2, Table 25). A summary of the use, perceived usability and usefulness of the construct is thus offered. Finally, the chapter provides answers to the research questions initially stated in Chapter 3.1.

8.1 Contents and structure of the construct

Table 53 summarises the findings from case studies and expert evaluations. These findings are reflected against the main initial methods for fulfilling the criteria for a good construct (presented in Chapter 6.2). In this way, it is possible to distinguish those characters and items useful and important from those not so important.

Table 53 Summary of case findings and expert evaluations on the suggested methods for fulfilling the criteria for a well functioning construct

Suggested methods for fulfilling the criteria for a well functioning construct (adopted from Chapter 6.2)	Expert support	Case study support
Comprehensive contents based on success factors of carrying out change It was demonstrated (Chapters 7.1 and 7.2) that the CEG is comprehensive and reflects both the success factors found in the literature and the factors the CEG was originally designed on.	**Strong support** for the contents. Some minor suggestions for changes.	**Strong support**: both interview and questionnaire data strongly supported the existing contents of the CEG. Nothing essential was missing and nothing was useless. Comprehensiveness was supported because users wanted to find answers to different kinds of problems in different kinds of change projects. Shortcomings or flaws in the contents did not have any role in decreasing the amount of using the construct.
Contains two separate artefacts: both a paper and an electronic part The CEG consists of two separate artefacts. (Chapter 7.1)	**Strong support** by some experts – not objected by anyone.	**Strong support**: the CEG should be as comprehensive as possible. A thin paper version for quick checks and security and a CD-ROM for practical tools and other more thorough material.
Tools compatible with MS Office programs All tools were made using programs compatible with MS Office programs (Chapter 7.1)	**Strong (implied) support:** a simple user interface and the ability to customise tools were considered very important.	**Strong (implied) support:** a simple user interface and the ability to customise tools were considered very important.
Clear chronological phase model The CEG is divided into fourteen phases (Chapter 7.1)	**Some support** - however, not emphasised, in particular.	**Very strong support:** the phase models were in very active use and perceived very useful according to different data collection methods. Users were looking for some structure to a complex change effort.
Modular structure The CEG is divided into fourteen phases which all contain different modules for proceeding in the project to its next phase. (Chapter 7.1)	**Strong support:** it was emphasised that the basic structure with phases and modules was successful and worked well.	**Strong support:** the structure of the manual was clear and worked well. Modules in the CD-ROM were also clear and practical. However, some of them were difficult to find. There was a need to find things easily and the clear modular structure supported this need.
Theory summary Each phase in the CEG begins with a short introduction (Chapter 7.1)	**No clear support** – however, not objected, either.	**Some support** in the questionnaire data. However, not emphasised in interviews. Not perceived useless, either.
Checklists The CEG contains TO-DO lists and other checklists (Chapter 7.1)	**Strong support.**	**Very strong support:** checklists were in very active use and perceived useful according to different methods. People wanted to discover new ideas and needed to be sure that they were doing the right things.
Minicases The CEG contains minicases (Chapter 7.1)	**No clear support.**	**Some support:** minicases were used occasionally. More support in the interview than in the questionnaire data. Users wanted to find practical examples of how things had been done in other places as it gave security and facilitated choosing and carrying out actions.
Tasks The CEG contains tasks for the user (Chapter 7.1)	**No clear support:** not objected, either.	**Some support**: some support in the questionnaire data. However, not emphasised in interviews. Not perceived useless, either.
Practical tools The CD-ROM contains practical tools, document templates, examples and group works (Chapter 7.1)	**Strong support:** document templates strongly supported. Examples and group works also supported, yet not so clearly.	**Strong support:** document templates, in particular, were used and found useful. Not as strong support for examples and group works. However, users were clearly satisfied with tools giving support for carrying out practical steps in the change project. Four people did not use the CD-ROM.
Training included in the package Users were trained to use the CEG (Chapter 7.3)	**Some support:** some training was clearly needed.	**Some support:** some training was needed. However, the needs varied a lot: some needed help for using the CD-ROM, some others more information about change projects, in general etc. Training is important, yet the role of it is more complex than anticipated.

Both, the interview and the questionnaire data supported the existing contents of the CEG. The contents seems to be suitable for different kinds of projects and for both experienced and inexperienced project managers. Nothing essential is missing and nothing is useless, yet some detailed comments on emphasising some parts of the CEG more heavily were expressed.

However, shortcomings or flaws in the contents did not have a significant affect in decreasing the amount of use.

Although the CEG is very comprehensive, nobody could point out any specific phase, module or other item that was useless or otherwise incorrect in terms of the information. Although I tried to push some users to distinguish useless parts in the CEG, they were not able to do it. Users saw that much was useless for one single project but in order to be useful as a generic product, it must also be comprehensive. People wanted to find answers to different kinds of problems in different kinds of change projects.

The CEG reflects all initial success factors it was originally designed on and, further, all factors, i.e., will, ability, opportunity and discipline were perceived important in the construct. Potential success factors, found in the literature, are also covered by the CEG. Moreover, it was emphasised, in particular, that the combination of softer and harder issues was needed and well executed in the CEG.

Users perceived that the CEG was a generic construct for different kinds of change projects. The CEG was considered maybe even too comprehensive, yet it was also suggested that it should be as comprehensive as possible, providing that it is easy to find the piece of information you are looking for. For this reason, it was difficult for the users to distinguish any specific phase or module above the rest. “They are all good” was a typical answer, and “you just use those parts you need in your project” a typical explanation. In other words, users did not even expect to use everything in the CEG from the very beginning to the end of the product.

Although the manual was used more actively and perceived more user friendly than the CD-ROM, it was emphasised that both the manual and the CD-ROM were needed. That is, the initial idea of having two separate artefacts, one being very concise and fast to use as a reminder and the other comprising comprehensive material on all pertinent issues on change project management and practical tools for the execution, was clearly supported.

The possibility and easiness to modify the product according to specific needs was also rated high. In practice, it means that the user interface should be very simple and, preferably already familiar to the users. All TOOLS included in the CEG are on Microsoft Windows programs. This made it easier for the users to customise TOOLS to fit better their specific needs and environments. It was also noted that only a light training on the user interface was sufficient – more training was needed on change project management, in general, and on the factors the CEG is based on. For this reason, it was suggested that for more experienced project managers a very short introductory training should be enough.

The CEG is divided into fourteen phases (the MAP OF ALL PHASES). The MAP OF ALL PHASES was in very active use and was also perceived very useful according to different data sources and collection methods. The evidence was thus strongly in favour of phase models. Especially users found this module very useful as they were looking for some kind of structure, systemacy, control and clear guidelines to follow[40]. The MAP OF ALL PHASES also served the need to comprehend the project as a whole – in other words, to see things to

[40] Interesting is that the users were at the same time looking for some kind of clear structure and framework to follow and the possibility to choose only those parts and modules they needed. The phase model obviously gave security to the user by making a complex thing easier to comprehend and, at the same time, made it easier to find and pick up those parts the user needed, in particular. The CEG thus avoided the criticism phase models have faced in the literature (e.g., Buhanist 2000, 5; Cummings and Worley 1993, 67; Kanter et al. 1992, 372).

be expected in the future in a very complex challenge effort. The project became more structured and was carried out in more control.

Needing and using a clear phase model does not, however mean that users would like to follow the path rigorously and strictly. On the contrary, it was emphasised that users wanted to find quickly those parts and modules they needed and only used them in their change projects. This notion of choosing only relevant modules was supported by the expert data, too. Consequently, the construct should be as comprehensive as possible to suit well in all kinds of change projects, it should offer a clear model for carrying out the change and, further, it should be easy to identify and pick up only those modules most urgently needed in the project in concern. In the CEG, these requirements were fulfilled by offering (1) two different artefacts: a concise and a thorough one, (2) a clear phase model that reflects real change projects as well as possible, (3) a modular structure to enable fast and easy identification and access to all tools relevant for the change project.

The best perceived modules in the CEG were MAP OF ALL PHASES, CHECKLISTS and DOCUMENT TEMPLATES. Users were looking for clear guidelines to follow yet also the possibility and easiness to modify the construct according to specific needs was rated high. In addition to phase models, users needed short reminders and idea sources, that is, CHECKLISTS to give new ideas and to ensure that they were doing the right things. DOCUMENT TEMPLATES' role was then to realise each action point in the CHECKLIST and to make it easier to move on in the phase model.

CHECKLISTS helped users remember important things in different phases of the project and fostered thinking. By following CHECKLISTS, users could feel themselves secure – he or she could be confident of being on the right track. CHECKLISTS also made it possible to find critical information fast and to apply new ideas flexibly in everyday project work. They were in a very active use and were also perceived useful according to different data sources and collection methods. All users explicitly mentioned the usefulness of CHECKLISTS.

MINICASES and other modules with individual tasks, stories and explanations (SHORT DESCRIPTION and TASKS) were more or less used for background information and putting material in other modules, e.g., in CHECKLISTS, in a real life context. Depending on the informant, MINICASES and TASKS received either intermediate or strong support. SHORT DESCRIPTIONS were however not emphasised, in particular. The modules with direct practical utility were addressed more than the ones with only an instrumental value for the user. This is quite understandable as people were looking for tangible and practical help from the construct.

The CD-ROM contained practical TOOLS (DOCUMENT TEMPLATES, EXAMPLES AND GROUP WORKS). If CHECKLISTS were the means for doing the right things, TOOLS' role was then to realise each action point in the CHECKLIST and, thus, to make sure the right things identified in CHECKLISTS were also done or realised right and efficiently. By the help of TOOLS, it was easier to move on in the phase model from one phase to the following one. Experts, who were mainly consultants and trainers, found practical TOOLS the best, not e.g., the MAP OF ALL PHASES, which most of the users had found very good. Maybe experienced change management consultants took phase models for granted and thus valued them not as high.

DOCUMENT TEMPLATES were strongly supported by the research data and were used more than EXAMPLES and GROUP WORKS. For instance, user interview data did not put much emphasis on EXAMPLES or GROUP WORKS but mainly addressed the importance of DOCUMENT TEMPLATES. There are a few explanations to this. The users had difficulties in distinguishing EXAMPLES from DOCUMENT TEMPLATES and GROUP

WORKS as an EXAMPLE was always a filled in a TEMPLATE or a GROUP WORK and thus closely related to the other TOOLS. The modest use and emphasis of GROUP WORKS, however, may be explained by the fact that they are more difficult to apply than DOCUMENT TEMPLATES.

8.2 Use, usability and usefulness of the construct

A summary of the use, usability and usefulness of the CEG is offered in this chapter (Table 54). As already defined in Chapter 3.4, assessing the use, usability and usefulness of the construct are one of the most important criteria for validating it and for evaluating the research.

Table 54 Summary of case findings and expert evaluations in terms of the use, usability and usefulness of the construct

	Expert support	Case study support
Use of the CEG	**No clear support**: the purpose was not that the experts would use the CEG. However, some had still used it in their consulting projects.	**Strong support:** project managers with different kind of experience used the CEG. The construct was not used systematically starting from the first pages and ending at the last tool or document template.
Usability of the CEG	**Strong support**: according to the experts, the basic structure, i.e., the phase model and modules attached to each phase, was clear, successful and worked well.	**Strong support**: data about the usability and the structure of the CEG received by different methods was congruent and consistent; the CEG was considered user friendly, clear, simple and easy to comprehend. Customising tools was also quite easy. The phase model combined with a modular structure gave an easy access to all modules attached to each phase. Furthermore, the construct was attractive and easy to approach. The manual was easier to use than the CD-ROM. Although the CD-ROM's structure was simple and logical, it was quite difficult to find information fast. Moving from one place to another (in the CD-ROM) was difficult for some users and, sometimes, even caused technical problems. Active users, however, perceived the usability of the CD-ROM good.
Usefulness of the CEG	**Strong support:** experts anticipated that CEG would be useful in practice. They also addressed the urgent need and the novelty of the construct.	**Strong support**: the CEG was perceived useful in many ways. Obviously, it also had positive effect on change projects. A cause-and-effect relationship between the use of the CEG and the success in the project was, however, difficult and even meaningless to demonstrate explicitly. The novelty of and the need for the construct became obvious according to all data.

The manual was in more active use than the CD-ROM. This notion was supported by both the questionnaire and the interview data. All modules and phases were used and the most common purposes of the use were as a checklist of critical actions, as an idea source, as a reminder of critical factors, as a guideline, as a phase model and as a source of practical tools and templates. People were careful in considering their use very active since, usually, they only used some phases or modules of the CEG according to their specific needs.

Both, inexperienced and experienced project managers used the CEG. However, very experienced professionals with ingrained development routines used it only lightly as a reminder and a checklist. The construct was also used in different kinds of change projects; that is, for carrying out operational changes, for improving individuals' competencies and changing attitudes and for changing structures and systems.

Two different kinds of user groups were distinctive. The first group of users were those who used both the manual and the CD-ROM, picked up only those modules they needed and even modified them for their own purposes (B2, C1, C2, F1, G1, H1). The members of the second group (B4, C3, D1, G2, H2, I1) did not use the CD-ROM at all (except B4), and used the CEG quite passively (except H2) and as a reminder, as a source of ideas and as the basis for phasing the change project.

A usual way to use the CEG was first to browse or read through the manual and then to decide which parts of the product were essential for the project in concern (B2, G1, C3, C4, H1, H2). Checklists and tools were then customised to fit better the need and only those parts were used that had proven or seemed to be useful. The ability to modify all tools was found very important among some experts, too (E17, E23). One user (H1) noted that experienced project managers already had tools and methods of their own and might thus want to use them in conjunction with modules in the CEG. That is, the way to use the CEG was not rigorously to follow the path from the beginning to the end and to use all modules along the way.

The most significant factors decreasing the use of the CEG had something to do with either the user and his or her situation or the implementation policies and practices. Lack of time, line responsibilities, wrong timing of introduction and insufficient training and support were the most common factors causing a modest use of the CEG. However, people who did not have line responsibilities, who were responsible for the development of their organisation in general, and whose organisations supported the use of the CEG, used it more that others. Perceived contents, usability and CEG's ability to fulfil the user's needs were also somehow connected with the amount of use. Those who commented these factors very positively were active users of the CEG and an increased amount of the use even seemed to cause increased satisfaction on the contents, usability and usefulness of the CEG. Product related factors, such as the contents and the usability of the CEG, were not considered significant in decreasing the use of it.

The structure of the CEG was perceived clear and easy to comprehend. The phase model (MAP OF ALL PHASES) gave a structured and an easy access to all modules attached to each phase. The CEG, in general, resembled real change projects, and was attractive and easy to approach. Data received by different methods and from different sources was congruent and consistent regarding the usability and the structure of the CEG.

The manual was considered very user friendly, simple and sufficiently concise. The language, colours and lay out was also especially mentioned by some respondents. It was attractive and it was easy to find the information you needed due to the clear structure and small size.

The usability of the CD-ROM, however, did not satisfy all respondents. Although the structure was simple and logical, it was quite difficult to find information fast. Moving from one place to another was difficult and, sometimes, even caused technical problems. Active users, however, perceived the usability of the CD-ROM reasonable, yet not as high as the manual. Despite some critical arguments towards the CD-ROM, the opinion was that both items, the manual and the CD-ROM, were needed for their own purposes. A concise part would act as a reminder and a comprehensive part as a source of tools and templates.

According to the case studies, the CEG had been useful in practice. The practical usefulness was supported by all approaches used to evaluate the usefulness of the construct. The main areas of interest were (1) the CEG's ability to answer to users' needs and expectations, (2) the perceived usefulness of using the CEG, (3) the CEG's potential role in succeeding in the

project and, finally, (4) the novelty of the CEG as an artefact for assisting project managers to carry out change projects.

Users were looking for help for all phases of the change project and for both softer, motivational issues and for harder, project management issues. The CEG was capable of corresponding to the things users were looking for of the construct. In one respect, however, the CEG was not able to meet the challenge the user was facing, in particular. He looked for sophisticated tools for project scheduling which the CEG was not able to offer. Later, the very same respondent noted that simpler scheduling tools, such as offered in the CEG, are more practical for change projects.

In addition to being able to meet the expectations, the CEG was perceived useful in some other respects, too. That is, users perceived that the CEG was especially useful in refreshing memory and in reminding of important things and guiding to critical actions in carrying out the project. Further, it brought structure, systemacy and control to the project and supported learning new things related to managing change. People wanted to comprehend the challenge as a whole and to see all different issues related to the change effort at one glance. The CEG also helped meeting this challenge. In the above issues, interview data corroborated questionnaire data and expert opinions were consistent with user perceptions.

The use of the CEG had clearly some positive effects on the change projects it was used in. Those who had used the construct most actively, also succeeded in their change efforts. Passive users, in turn, did not close their projects with equal success. It was, however, impossible to demonstrate CEG's exact role in the success or failure of the project. Some other factors, such as project manager's responsibilities in the organisation, his or her personal motivation and incentives to succeed in the project and organisation's support also played a significant role in making the project a success.

The success or failure of a change project is the sum of many different factors and, thus, it was impossible to point out one single item determining the success of the change project. The CEG does reflect the critical success factors in carrying out the change and, if actively used, it should have a positive effect on the project. However, this data also exposed the importance of both the motivation of the project manager and the organisational policies and practices. Personal motivation of the project manager combined with appropriate resources, support and tools seems to be a powerful combination.

According to all data sources, the novelty of the construct is obvious. However, it was also noted that, in fact, if examined in parts or pieces, there is nothing breath-takingly new in the CEG. It was the construct as a whole and the fact that somebody had formed a clear structure for a whole change project and made even trivial things explicit by e.g., checklists, that makes the CEG unique and different from other constructs. All users planned to use the construct in their future projects, too.

The CEG was able to meet the criteria defined for it in the beginning of the construction phase (Chapter 6.2). It also supported the initial success factors (will, ability, opportunity and discipline) by e.g., facilitating motivation, enhancing learning, avoiding problems and supporting control and a systematic approach in the project. To summarise, the CEG functioned well in a real-life context and was useful to the practitioners (users) in many respects.

8.3 Answers to the research questions

Originally, the research issue was change management in organisations and it gradually focused on practical constructs for carrying out these change efforts. The objective of the

research was first, to solve the research problem by designing a novel construct for change project mangers. However, the second objective was to enhance the knowledge and to gain new understanding on constructs assisting project managers to carry out change projects.

The first research question *"is there a need for a new practical construct for change project managers to facilitate them to plan and implement change projects?"* was defined already in Chapter 1. The discussion on the first research question began in Chapter 1.1, Background and motivation of the study. Further insights were later offered particularly in Chapters 2 (existing theories) and 5 (practice). The conclusion was that there are constructs e.g., for more traditional projects, such as construction projects but they are not able to meet the most important challenges of change projects. Chapter 5 in particular, offered the final certainty of both the fact that there were no such constructs available and that there was a need for one.

The answer to the first research question is*: Yes, there is a need for a new practical construct for change project managers to facilitate them to plan and implement change projects.*

The second question in the research was then if it was possible to develop such a construct, in the first place, i.e., *"Is it possible to develop such a construct?"*. The design work began with an extensive literature review, a preliminary (case) study focusing on problems and critical success factors in change projects and two market surveys exploring both the need for a new artefact and the characteristics that would satisfy potential users' needs and make it useful in practice. The basis and the first corner stones of the construct were described in Chapters 5 and 6.

The preunderstanding was followed by a structured way to design and develop a new construct for carrying out change projects. The CEG's main principles and methods for becoming useful and achieving its objectives and the development work and different versions of the CEG combined with some test results were then described in Chapter 6 (Constructing). One of the main roles of this chapter was to make the process of designing and developing the construct explicit and transparent.

The third version of the construct was described in detail in Chapter 7.1. By describing the CEG 03 in detail, it was later possible to reflect the contents of it e.g., against the existing theories.

The CEG 03 was tested and evaluated by interviewing sixteen experts and conducting twelve case studies. The process of testing was described in Chapter 4.2.3. The evaluation results with cross case analysis were introduced and discussed later in Chapter 7. Detailed within case descriptions are provided in Appendix 10**.** They are especially important to the research since one objective of the research was to enhance the knowledge and to gain new understanding on constructs assisting project managers to carry out change projects. It was thus essential to carry out within case analysis to enable later cross case analysis and to foster understanding of the use of the construct in a real life context.

Chapter 7 proved that the construct, i.e., CEG version 03, had been used in different kinds of change projects and in all the different phases of projects and that it had also been useful in practice. The usability of the construct was also acknowledged. Chapter 7.2 revealed that the CEG supports the distinguishing characters of organisational change and change projects, in particular. This finding combined with the fact that a new construct was developed (Chapter

6,) and that it is comprehensive, generic and works at an operative level of implementation (Chapter 7), it is possible to give an answer to the second research question.

The answer to the second research question is: *Yes, it is possible to develop a practical construct for change project managers to facilitate them to plan and implement change projects.*

The remaining research question considered the characteristics of a well functioning construct. The contents and the structure of the CEG were thus explored in detail. Some times it was difficult to distinguish the contents from structure, e.g., when exploring issues related to modules and phases in the construct. However, the point was not to distinguish them, in particular, but merely to clarify the research process and the reporting of findings.

The question was approached by first designing a construct and testing it in order to find out its potential for improvement. The CEG version 03 which went through a close and thorough assessment and evaluation, was based on research data and experiences from practice and on a literature review (Chapters 2 and 5). Moreover, the design and the development work were structured, iterative by nature and initial ideas were changed to better ones as they emerged (Chapter 6).

The development of the construct was followed by a thorough final testing and evaluation. That is, the CEG version 03 was reflected against existing theories and initial success factors it was designed on. This was carried out to ensure the connection with the existing theories on managing change and projects and to confirm that, despite the iterative nature of the development work, the construct still reflected the initial success factors introduced in Chapter 5. A thorough expert evaluation and case studies followed this. The objectives were to evaluate the use and the practical functionality of the construct, to explore how the construct should be changed to become more useful, to enhance the knowledge and to gain new understanding on constructs assisting project managers to carry out change projects (The process of testing is described in Chapter 4.2.3, and the evaluation results are presented and discussed in Chapters 7 and 8.).

The contents of the CEG version 03 are based both on theory and practice. In Chapter 7.1, the contents of the construct are described in detail. As the process of designing the construct was thorough and sound and the evaluation results did not reveal any significant needs for changes (see summary in Chapter 8.1) the prevailing contents of the construct are approved.

Finding an answer to the question, how the information should be organised and what kind of entities (modules) should be defined and designed and why was also salient for answering the third research question. Again, the basis for the structure was formed in Chapter 5 and later refined in Chapter 6. Table 25 summarised the initial reasoning for choosing the structure for the construct.

In Chapters 7, and 8, the evaluation results of the structure were introduced, discussed and summarised. Table 53, in particular, elaborated the support for the existing structure of the CEG. The soundness and the thoroughness of the construction process combined with the evaluation results allow me to make inferences about the structure of a construct good for change project managers.

The answer to the third research question "what should the construct be like to facilitate project managers plan and implement change projects" is: *The contents of the CEG version 03 is useful in a construct assisting project managers plan and implement change projects and a good structure resembles the structure of the CEG 03*[41].

The characteristics, contents and structure of the CEG version 03 were introduced in Chapters 5, 6 and 7.1. The research was about characteristics of a good construct for change project managers and whether such a product could be constructed in the first place. The need for such an artefact was explored, a new artefact was constructed, thoroughly tested and its use in change projects was explored with case studies. Finally, all findings were summarised, inferences were made based on the findings and the research questions were answered.[42]

In addition to answering the research questions and solving a problem by designing a new construct, the objective was to enhance the knowledge and to gain new understanding on constructs assisting project managers to carry out change projects. The remainder of this chapter summarises the findings of designing a well functioning construct for change project mangers by introducing a new framework. This is followed by summarising other main learning points of the research.

By summarising the findings in Chapters 7 and 8, it is possible to produce a new framework. The framework illustrated in Figure 17 explains the connection between user's needs concerning a construct assisting them carry out change projects, and methods for fulfilling those needs. The framework only focuses on the structure of the construct. It does not take any stand on the information it should contain (the contents) or what the implementation or adoption process in the organisation should be like. Neither does it provide with detailed instructions on the artistic design (AD), such as the language, layout and make-up or on technical details.

[41] Answering the third research question as described above, does not mean that the CEG version 03 has no improvement potential, any more. However, the research results demonstrated the practical functionality of the construct. The importance of different modules in the CEG was introduced in Table 53.

[42] The question "how much better the CEG is compared to other tools" is difficult and even meaningless to quantify. However, in the preunderstanding –phase, no construct was found that could meet the needs of a change project, in particular. Further, the usefulness and the usability of the CEG was demonstrated and all users responded that they did not know any corresponding product and would use the CEG in the future, too.

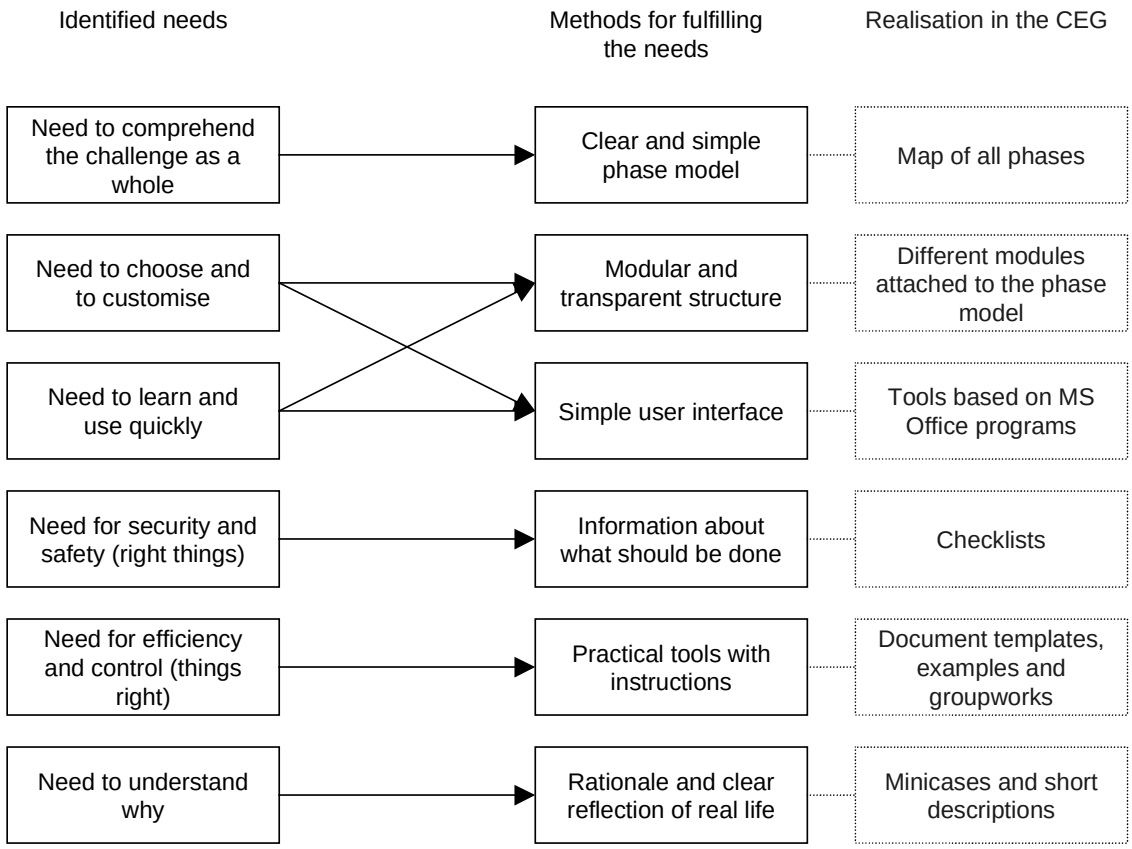

Figure 17 Framework for designing a construct to assist in carrying out change projects

One clear need that was distinguishable mainly in the case studies but also in expert data was the need to comprehend the challenge (change project) as a whole. That is, people needed information regarding what is to be expected in the project and how different phases and tasks are interrelated. On one hand, a clear and simple phase model helped users to visualise the challenge and, on the other hand, it helped them to launch the project. A clear phase model was supported although, at the same time, it was emphasised that it is impossible to squeeze all change projects into one model.

The finishing line of the last paragraph leads us to the next characteristic need users have for the construct: the need to choose and to customise. The idea and execution of a comprehensive construct covering all phases of change and both softer and harder issues was supported by experts and users. However, comprehensiveness was encouraged only if it would be easy and fast to identify and find those parts in the construct most relevant for the user. This prerequisite was clearly in favour of modular and transparent structure in the construct. Modularity means that different kinds of items are identified, clearly labelled and situated in the different phases of the construct. Transparent structure, however, means that the user has a fast access to the "table of contents", i.e., can easily see what it has to offer for each phase and situation in a change project.

Modular and transparent structure makes also the customisation easier as the user can quickly identify those modules s/he needs. More important for customisation is, however, the ability to modify individual tools in the construct. All tools should thus be made with software easy to learn and to use. The third need, that is, the need to learn how to use and to use the construct quickly is supported by the same methods as the need to choose and customise.

Modular and transparent structure combined with simple user interface seemed to be a good combination for making the use of the product fast and easy.

The fourth need identified in this study was the need for security and safety. People needed to be sure about the things they were doing. Am I doing the right things or not? Surprising was that experienced project managers expressed this need as much as project managers with less knowledge and experience. No matter how experienced the user was, he or she needed some backup for plans and actions. The construct should thus contain clear instructions about things that should be carried out in each phase or situation in the change. In the CEG this challenge was mainly met with checklists.

Doing the right things wasn't enough – things should also be done right, i.e., efficiently and in control. Mere instructions did not satisfy the needs of the user however important they may have been. People needed practical and tangible means for moving ahead in the project and not making hazardous mistakes. Practical TOOLS with instructions served well this purpose. That is, well-instructed TOOLS offer secure and tested ways to bring about tangible results and to proceed in the project. As we are talking about tools, instructions play an important role: a tool can be effective if it is used correctly and in a right place. In the CEG, DOCUMENT TEMPLATES, EXAMPLES and GROUP WORKS acted as practical TOOLS.

The sixth and the last need related to the structure and the modules in the construct is related with the information on how and where to use a certain tool. One identified need was namely to look for rationale and reasoning for using a certain part of the construct. Why and for what purposes should the module be used? Some parts of the construct should thus be able to answer the need for enhancing the understanding. However, in addition to individual parts in the construct, the ability to demonstrate that the construct mirrors real life situations well made it easier for the user to understand the need for using a certain module. In the CEG, the role of MINICASES and SHORT DESCRIPTIONS was to answer the question "why".

Interesting was that the need to understand "why" was not as distinctive and salient as the other five needs and, consequently, MINICASES and SHORT DESCRIPTIONS were not addressed in the research data. This can stem from a few different sources. First, almost all users had some experience on change projects and thus knew what was essential and why in a successful implementation. Another reason may be the fact that users knew that the CEG is based on research carried out on change projects combined with practical experiences. For the users, it was thus easy to rely on the messages the CEG was sending through its modules. One more cause of the modest emphasis on the need to understand "why" could be CEG's practical and tangible focus: people were looking for tangible things, not reasoning, descriptions or explanations.

8.4 Other observations

In addition to finding answers to the research questions, I was able to make some other observations. The first was that, as also discussed in other literature, it is difficult to assess the success of a change project and the role of a single tool on the project success (e.g., Kasanen et al. 1991, 305; Klein and Sorra 1996, 1073; Salminen 2000, 15). Case studies revealed that the CEG had been useful yet the respondents had difficulties with distinguishing the exact role of the construct in the success. Some other factors, such as project manager's responsibilities in the organisation, his or her personal motivation and incentives to succeed in the project and organisation's support also played a significant role in making the project a success.

It was also challenging to assess which factors affect the amount of using the construct. Although innovation implementation was not the main issue in the research, I did make some observations. The most significant factors decreasing the use of the CEG had something to do with either the user and his or her situation or implementation policies and practices. Lack of time, line responsibilities, wrong timing of introduction and insufficient training and support from the organisation were the most important factors causing a modest use of the CEG. However, people who did not have line responsibilities, who were responsible for the development of their organisation in general, and whose organisations supported the use of the CEG, used it more than others did. Product related factors, such as the contents and the usability of the CEG, were not considered significant in decreasing the use of it.

As discussed earlier, the cause-and-effect chain most evidently starts from the amount of use, that is, those who used the CEG much also perceived the contents of it better than passive users. The challenge is thus to make people use the product and, in that way, make them see the potential benefits of using it.

The issues and findings discussed in this sub-chapter are only tentative in nature and thus good starting points for further examination.

9 DISCUSSION

Chapter 9 includes the discussion of both epistemic and practical contribution of the research, evaluation of the research as a whole and some issues for further research on the field.

9.1 Practical and theoretical contribution of the research

Kasanen et al. suggest, that a market test would be the proper way to validate a construct. They further introduce a two-phase procedure for validation and point out that even the requirements in the first phase, i.e., in a weak market test are often too tough for a construct. Passing a weak market test indicates that a manager responsible for operations has used the construct in his or her decision making or actions. Passing a strong market test, however, presupposes even increased financial standing. (Kasanen et al. 1991, 306; Kasanen et al. 1993, 253; see also Eden and Huxham 1996, 80)

Constructive research is about solving problems e.g., with a model, a plan, an organisation, or a machine. However, mere problem solving does not fulfil the requirements of doing scientific research. Hence, a vital part of constructive research is also to relate and compare the research results with existing knowledge and research and further to prove the novelty and usefulness of the construct. This, however, brings along another challenge to constructive research: testing the usefulness of the construct may face problems since in addition to the novel construct, there are numerous other factors simultaneously influencing the performance of an organisation. Furthermore, in addition to the goodness of the construct itself, the way of implementing and disseminating it also has a strong influence in the perceived usefulness and value of the construct. (Kasanen et al. 1991, 305)

The criteria for the outcome of a good constructive case study were summarised in Chapter 3.4. Further criteria were defined as a result of preunderstanding and a more comprehensive elaboration of the research issue. All criteria were summarised in Chapter 6.2 (Table 25). This chapter discusses CEG's capabilities of fulfilling these criteria.

Based on the research strategies:

- Practical relevance of the construct
- Construct's connection to the existing theory and theoretical novelty
- Proved use of the construct
- Proved practical usability
- Proved practical usefulness

Based on the literature review:

- (Practical: see above)
- Comprehensive
- Generic
- Including also traditional project management view
- Paying attention to distinctive features of changing organisations
- For an operative level

The discussion on the practical relevance of the problem domain began in Chapter 1.1. Further insights were later offered particularly in Chapters 2 and 5. Chapter 2 offered an extensive theoretical elaboration and corroborated the initial hypothesis of the need for a novel construct for change project management. Chapter 5, in particular, offered the final certainty of the need for a novel construct. The practical relevance was later confirmed with expert interviews and case studies (Chapter 7.3). Different sources of data in different phases of the research were congruent on the practical relevance of the CEG.

The CEG could clearly be connected to the existing theories in the problem domain. The contents of the construct reflect the important issues and success factors found in change management and project management literature. The CEG emphasises pertinent features of traditional project management, such as objectives, scope definition, resource allocation, follow up and the assessment of stakeholder satisfaction. The characteristics of the project life cycle model are also very distinct. However, the CEG also supports the distinguishing characters of organisational change and change projects, in particular. Human, motivational and political aspects of change are salient in the CEG and supported by several modules. (Chapter 7.2)

All modules and phases in the CEG were used and the most common purposes of the use were as a checklist of critical actions, an idea source, a reminder of critical factors, a guideline, a phase model and a source of practical tools and templates. Both, inexperienced and experienced project managers used the CEG. (Chapter 7.3.1)

The structure of the CEG was perceived clear and easy to comprehend. The phase model gives a structured and an easy access to all modules attached to each phase. The CEG, in general, resembles real change projects, and is attractive and easy to approach. Especially the manual was considered very user friendly, simple and concise enough. It is attractive and it is easy to find information you need due to the clear structure and small size. Users perceived the usability of the CD-ROM reasonable, yet not as high as the manual. Data received using different methods and from different sources were congruent and consistent regarding the usability and the structure of the CEG. (Chapter 7.3.3)

According to the case studies, the CEG was useful in practice. The practical usefulness was supported by all approaches used to evaluate the usefulness of the construct. Users were looking for help for all phases of the change project and for both softer, motivational issues and for harder, project management issues. The CEG was capable of corresponding to the things users were looking for in the construct. In addition to being able to meet the expectations, the CEG was perceived useful in some other respects, too. That is, users perceived that it was especially useful in refreshing memory and in reminding of important thins and guiding to critical actions in carrying out the project. Further, it brought structure, systemacy and control to the project and supported learning new things related to managing change. (Chapter 7.3.4)

The use of the CEG had clearly some positive effects on the change projects it was used in. Those who had used the construct most actively also succeeded in their change efforts. Passive users, in turn, did not close their projects with equal success. All users planned to use the construct in the future projects, too. It was, however, impossible to demonstrate the CEG's exact role in the success or failure of the project. Some other factors, such as project manager's responsibilities in the organisation, his or her personal motivation and incentives to succeed in the project and organisation's support played also a significant role in making the project a success. (Chapter 7.3.4)

According to all data sources, the novelty of the construct is obvious. It is the construct as a whole, the combination of change management and project management elements and the

fact that somebody has formed a clear structure for a whole change project and made even trivial things explicit by e.g., checklists, that makes the CEG unique and different from other constructs. Both, the practical and theoretical novelty were thus demonstrated.

Users perceived that the CEG was a generic construct. It was used in different kinds of change projects; that is, for carrying out operational changes, for improving individuals' competencies and changing attitudes and for changing structures and systems (Chapter 7.3.1). It was also demonstrated that the CEG is comprehensive covering all phases of changing organisations, includes traditional project management view and pays attention to distinctive features of changing organisations (Chapters 7.1 and 7.3). Furthermore, the CEG was used and found useful at an operative level of change (Chapter 7.3).

9.2 Validity and reliability of the research

The quality of the research design is commonly confirmed by maximising the following four aspects of research: construct validity, internal validity, external validity, and reliability (e.g., Ellram 1996, 104; Yin 1984, 40). Some other aspects and terminology have also been suggested to fit in the qualitative research, in particular (e.g., Marshall and Rossman 1995, 143). I decided to use the traditional aspects yet remembering and emphasising the distinguishing characteristics of qualitative case studies.

According to Yin (1984, 85), some general guidelines apply to all means of collecting data and substantially increase the quality of the research. Such guidelines are *multiple source of evidence, a case study database, and a chain of evidence* – that is, explicit links between the questions asked, the data collected and the conclusions drawn. These principles particularly help to deal with the challenges of construct validity and reliability. (Yin 1984, 85)

> *Principle 1: using multiple sources of evidence (a form of triangulation).* A major strength of a case study is the possibility to retrieve data from various sources of evidence. The most important potential benefit in using multiple sources of evidence is the potential and advantages of the process of triangulation, that lead to more convincing and accurate information, thus increasing both construct validity and reliability of the research. (Yin 1984, 96)
>
> *Principle 2: creating a case study database.* A second principle of data collection focuses on the way of organising and documenting the data collected. In the contents and structure of a database, a special attention should be paid to distinguishing original, untouched data, from reports, interpretations and conclusions. Unfortunately, often the line between these two forms of evidence becomes blurred – at least for the reader who wishes to have a deeper look in to the database that led to the conclusions. (Yin 1984, 98)
>
> *Principle 3: maintaining a chain of evidence.* By maintaining a clear chain of evidence, an investigator may increase the reliability of the information in a case study. The basic principle and the process of building a chain of evidence is to allow an external observer to scrutinise and judge the research process from initial research questions to ultimate case study conclusions. Thus, an observer should be able to trace all the steps from research questions leading to evidence and conclusions, and vice versa. In practice, it means that no original evidence should have been lost and a clear description of the research process should be in hand. (Yin 1984, 102)

9.2.1 Construct validity

Construct validity means that what you want to measure is really measured. It emphasises the establishment of the proper operational measures of the concepts being studied. (Ellram 1996, 104; Yin 1984, 41-42). To meet the challenge of construct validity, Yin (1984, 42; see also Stake 1995, 115) guides the researcher to cover the following steps and tactics:

- Choose cases that most evidently have something to offer regarding the research problem
- Demonstrate that your way of measurement and measures used are clearly connected with the phenomena studied
- Use multiple source of evidence (a form of triangulation)
- Establish a chain of evidence
- Have case study reports reviewed by key informants

The criteria for choosing cases were introduced in Chapter 7.3. I wanted to test the CEG in many different kinds of surroundings, that is, in large and small organisations, in different fields of industries and in different kinds of change projects. The main idea was, however, not to enable more reliable generalisation but, rather, to provide more thorough understanding of the CEG, its use, usability and usefulness in different user environments. In other words, one of the main criteria for choosing cases was to find answers to the research questions. However, also some other criteria were applied (see Chapter 7.3).

Choosing correct measures was supported by defining the research issue, the problem domain and the relevant problem and by decomposing more detailed questions from the research problem. In this way, it was ensured that the measurement and measures used in the course of the study were connected with the phenomenon studied. Different data collecting methods were rechecked regularly to keep the focus on the essential questions and strongly related to the research problem.

Triangulation means deploying more than one method in a study to provide enhanced validity and to increase the chance that results are not biased. (Cohen & Manion 1989, 269-277; Ellram 1996, 38; Gummesson 1993, 17; Jick 1979, 602; Lincoln & Cuba 1985, 305-307; Patton 1990, 464; Stake 1995, 45) Triangulation is used to ensure that results are not method-dependent and to enhance reliability, to check the validity of the data and to generate richer data. (Eden and Huxham 1996, 83; Gummesson 1993, 37; Stake 1995, 45)

Several different techniques of triangulation may be used. Stake refers to Norman Denzin (1984) when distinguishing four different kinds of triangulation: (1) data source triangulation, (2) investigator (or analyst) triangulation, (3) theory triangulation, and (4) methodological triangulation. (Stake 1995, 112-114; see also Patton 1990, 464)

Data source triangulation means checking out the consistency of different data sources i.e., looking at the same case, person or phenomenon from different sources of data, at different times, in other spaces, or in different occasions. Investigator triangulation encourages several researchers to have a look at the very same data, scene, phenomenon, finding or interpretation. (Stake 1995, 113; see also Patton 1990, 464)

Theory triangulation means using multiple perspectives or theories to interpret the data. Theory triangulation and investigator triangulation are thus very much alike, with only the distinction that the former insists co-observers, panellists or reviewers to represent a theoretical viewpoint different from the one the researcher has. However, even though having the same theoretical background, two separate people always interpret things differently and

thus it is difficult to point out the difference between these two ways to triangulate. (Stake 1995, 113; Patton 1990, 464)

The fourth protocol for triangulation, methodological triangulation, increases the confidence in interpretations by the use of different methods for searching answers to the research questions. It is thus a process of checking out the consistency of findings generated by different data-collection methods. Basically it means that the researcher should use observations, interviews, workshops, documents etc. to explore a certain issue. (Stake 1995, 114; see also Patton 1990, 464)

In this research, triangulation was used in a rich manner. First, different sources of data (archives, experts, users, literature, international conferences, Internet pages) were applied in different phases of the research. I had a chance to observe the cases on a regular basis and thus to compare and cross-check the consistency of information derived at different times and by different means. Project documentation was compared with interview and questionnaire data, several informal discussions allowed me to compare users' opinions at different phases of the research and expert opinions were reflected against user comments. Different data captured different things related to the phenomenon. My challenge was to point out similarities and differences in data from different sources, to find patterns and explanations and to make inferences through a deep understanding of the phenomenon.

Investigator triangulation was also used as different members of our research team observed and studied the use of the CEG. We discussed our observations, looked for different explanations for the findings (explanation building and pattern matching) and challenged alternative interpretations. The team effort was an important means of investigator triangulation. One colleague of mine was valuable, in particular, as she conducted most of the interviews in the testing phase and used the results as a part of her undergraduate studies. She independently analysed the same qualitative data as I and then we compared our findings. Her theoretical background was in sociology, which increased the value of the triangulation.

Different methods of collecting data were used as another mean of triangulation. Although qualitative methods played the main role in the research, also quantitative methods were applied. The construct (CEG) was described qualitatively and quantitatively, experts and users were interviewed, questionnaires were applied, documents were studied, action research methods were used, and informal discussions were carried out both with the users of the CEG and experts of the problem domain. The basic reason for applying rich triangulation in the research was to become more confident of the results. I wanted to find both corroborating and disconfirming evidence and to challenge my initial interpretations. Triangulation was an invaluable aid for doing it.

Establishing a chain of evidence and events relates to readers ability to follow different phases of the research from the statement of research questions and data analysis to final conclusions and answers to the questions by reading the research report (Yin 1984, 102). Maintaining the chain of evidence was one of my main concerns both with the study and with reporting it. That is, this report is structured both by issues and in a chronological manner to make it retrospectively easy to trace all the steps from research questions leading to evidence and conclusions. Research questions were derived from the research problem introduced in Chapter 3.1. and facilitated finding a solution for the research problem, keeping the focus on the research issue and carrying out the interviews and designing the questionnaires. Figure 3 and Figure 8 elaborate the design of the research and the structure of its reporting. The chain of evidence should be clearly enough described to facilitate understanding and approving the conclusions of the research.

I could have placed more emphasis on “member checking” i.e., having case study reports reviewed by key informants (Stake 1995, 115) Some informants (B2, B4, D1, H1, I1) did review the case reports and commented my interpretations. Most of the comments were supporting and only some detailed changes were made due to the informant reviews.

9.2.2 Internal validity

Internal validity is always to do with causal relationships or explanatory studies. Thus, if that is not the purpose in the study, internal validity does not play a major role in the quality of the research. On the other hand, if causal relationships are to be proved, the internal validity refers to the level of certainty. How sure can you be, that there exists a causal relationship between events x and y. (Yin 1984, 42-43, see also Ellram 1996, 107) The purpose of this study was not to find causal relationships between events under study but mainly to increase the understanding of cases and to make inferences based on the understanding.

Pattern matching and explanation building were applied in case studies. Cross-case analysis described in Chapter 7 includes finding patterns and rival explanations for findings in individual cases. Case descriptions should offer a basis clear enough for judging the interpretations of individual cases.

9.2.3 External validity

External validity explains how generalisable the research findings are beyond the cases used in the study (Yin 1984, 43). External validity has been an important issue and the number one subject of discussion when talking about the quality of case study research. Yin (1984, 43) notices that critics typically claim that no generalising can be undertaken on the basis of a few case studies, let alone a single case study.

However, Yin (1984, 38; see also Eisenhardt 1989b, 545; Huberman and Miles 1994, 435) points out that the underlying flaw in the critics against external validity in case studies lay on the assumption that case studies should be handled in a similar way to surveys, where a sample (when correctly chosen) readily generalises to a large universe or population. According to Yin (1984, 38), there are two different ways of generalisation; that is, statistical generalisation and analytical generalisation. (see also Buhanist 2000, 166) Statistical generalising – which is a somewhat more commonly recognised form of generalising – means that an inference about a population is made on the basis of empirical data collected about a sample or describing relationships in which the value of a group of dependent variables are determined by the values of a group of independent ones (Yin 1984, 38; Argyris and Schön 1991, 85). However, if positivist science approach is not applied in the research, generalisation should consequently not be statistical, but rather analytical. (Argyris and Schön 1991, 85; Gummesson 1993, 14; Kasanen et al. 1991, 315; Yin 1984, 38)

In case studies, analytical generalisation leads to replicating case studies, carrying out cross-case analysis and verifying patterns (Ellram 1996, 104; see also Huberman and Miles 1994, 435). Yin notes that if even two cases resemble and support the results from previous studies, replication may be claimed (Yin 1984, 38). Kasanen et al. summarise that generalising from case studies is making inferences through deep understanding of the phenomena and the solution implemented in it. The objective is thus to gain comprehensive understanding about the subject in concern by thoroughly examining the phenomena via only a few cases (Kasanen et al. 1991, 315). Stake (1995, 36) labels the method of trying to deeply understand the nature of a single case as the method of specimen and, in his words, it is frequently used in case studies. The objective is to understand the particular case under the study.

The main point is that, in case studies, the researcher should move towards analytical generalisation and to try to avoid the misconception and flaw of comparing a case with a single respondent in a survey. Case study researchers should not try to claim that the cases chosen would represent the whole of the population, i.e., all other possible cases. However, they do claim that by a profound understanding of a limited amount of cases and their contexts, it is possible to suggest how other cases, those not included in the study, would behave.

Stake brings up a third form of generalising, naturalistic generalisation by which he refers to generalisation from people's own experiences, not from data received from a particular case or cases. The purpose is thus to provide the reader with vicarious experiences over the case. (Stake 1995, 85-86) Patton (1990, 429) defines that a research report should be readable, understandable, and relatively free of academic jargon. Yin also comments that a case study should display sufficient evidence related to the inferences. Eisenhardt (1989a, 548) states that a thorough reporting of information should give confidence that the theory is valid. The reader of the study should thus by offered a chance independently to judge the merits, the validity, and the reliability of the analysis and the entire study, as well. (Yin 1984, 148-149)

In this study, analytical generalisation was facilitated by choosing the cases to represent different kinds of change project environments; that is, small and large companies and projects, experienced and inexperienced project managers, cases from different fields of industry, successful and unsuccessful cases and projects focusing on operations, individuals and structures. The idea was not to provide sampling to enable statistical generalisations but, rather, by replication to provide a more thorough understanding of the CEG, it's use and practical functionality in different user environments. The process of case studies made it possible to understand the CEG in different kinds of environments, and to find patterns, confirmations, disconfirmations and explanations.

It was important to test the CEG in projects the CEG was originally designed for. That is, organisational change projects – not e.g., investment or construction projects. A thorough understanding of the problem domain and the cases in the study allows me to suggest that the results presented in this thesis may be transferred in other organisational change projects. However, a successful use of the construct prerequisites training and understanding of both the contents of the construct and the characteristics of the change project and its surroundings.

One factor decreasing the generalisability or transferability of the results is that the research was conducted in Finland in Finnish organisations. The applicability of the results in other countries may thus be limited. Transferring and applying the results in other countries becomes more reliable if the user is familiar with the characteristics of organisational cultures both in Finland and in the other country s/he is applying the results. The existing literature supports the transferability as the success factors of change management are similar in Finnish and foreign literature (e.g., Beer et al. 1990a; Kanter et al. 1992; Kotter 1996; Buhanist 2000; Lanning et al. 1999; Salminen 2000)

The reporting of data, its analysis and the execution of the research was made as transparent and easy to understand as possible. I tried to avoid scientific jargon in reporting and to report issues and findings as I experienced them in the course of the research. Raw data, i.e., the description of cases and the CEG, is offered to enable readers to consider their own alternative interpretations.

9.2.4 Reliability

Traditionally, reliability means that a later investigator would be able to repeat the already conducted study in the same environment and receive the same results and draw the same conclusions[43]. Thus, an important prerequisite for allowing future researchers to repeat an earlier study is a thorough documentation of the research implementation.

In qualitative research, conventional measures of reliability, e.g., replicability, are not very applicable as the real world is constantly changing. Ensuring – and demonstrating to others – that "your data generation and analysis have not only been appropriate to the research questions, but also thorough, careful, honest and accurate" becomes essential. (Mason 1996, 146; Marshall and Rossman 195, 146) Mason thus places emphasis on demonstrating how the researcher has achieved the degree of reliability.

There are some ways to ensure the reliability of the study, such as the use of rigorous techniques and methods, e.g., case study protocol and interview guide, a case study database, a pilot study in order to refine the research and on site visits. (Ellram 1996, 104; Yin 1984, 45; see also Huberman and Miles 1994, 439, Mason 1996, 146)

Ellram further states that there should be a proper research design, execution and data analysis also in case study research, since otherwise the research would only produce poor and unreliable results. (Ellram 1996, 95; Stake 1995, 15,33; see also Argyris and Schön 1991, 85[44]; Eisenhardt 1989a, 548) Eisenhardt states the meaning of rigor quite clearly in the following: "No matter how small our sample or what our interest, we have always tried to go into organisations with a well-defined focus – to collect specific kinds of data systematically". (Eisenhardt 1989a, 536)

In this study, a case study database was created and all relevant material concerning each case was gathered in the database. All collected data were in well-organised and retrievable form which made it easy to find patterns and explanations if one finding was challenged by another one. Interpretations and conclusions were sometimes included in the database but they were clearly marked or otherwise separated from the original documentation. In this research, one objective was by a transparent reporting to offer the reader a chance independently to judge the merits, the validity, and the reliability of the analysis.

Rigorous techniques and methods in data generation and interpretation were applied and made explicit (Chapter 4, e.g., by using Atlas software). Methodological and investigator triangulation were applied and rival explanations were continuously sought to enhance the reliability of the research. Alternative perspectives were found by disconfirming my own interpretations. The research and its results were compared with existing knowledge. Furthermore, my role in the research and experiences were presented in Chapter 4.3 (see Gummesson 1991, 160; Patton 1990, 461).

In terms of reliability, there were also some weaknesses and things I would probably do differently. I mentioned earlier that most of the interviews in testing the CEG version 03 were

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[43] In case studies and constructive research, the ability to repeat the already conducted study in the same environment is not very applicable or meaningful. No one could repeat the very same process with the same people, projects and surroundings as used in my study.

[44] Argyris and Schön (1991, 85) suggest that social scientists should choose between rigor and relevance. In practice that means choosing between the rigor of normal science and the relevance. When applying the former, the risk is that research becomes irrelevant to the practitioners' demands for usable knowledge. However, when choosing the latter, researchers risk is falling short of prevailing disciplinary standards of rigor. The challenge for action researchers is, thus, to meet standards of appropriate rigor without sacrificing the relevance.

carried out by a team colleague. A new member did bring in a new perspective and it became easier to apply investigator triangulation and to find rival explanation. However, it also made it very challenging for me to thoroughly understand and to interpret the contents of the interview material and to have an influence on carrying out interviews. Next time I would probably carry out more test interviews by myself. Regular discussions with the colleague of mine and with users in case studies and some additional interviews carried out by me, made it possible to minimise misunderstandings and to increase the reliability.

Another challenge regarding the reliability emerged because of the iterative nature of the research. That is, the questions that intrigued me in the beginning of the research were not exactly the same as those at the end of the study. The emphasis of the research faced some changes due to my learning process. Consequently, the quality of data could have been better in some places. For instance, it was difficult to find answers from the market surveys (Chapter 5.2) to some questions I had at the end of my research process.

My own role and the role of other research team members in some cases may also have influenced the test results. The users in cases G1 and G2 said explicitly that the active role of researchers reduced the amount of using the CEG. Our research team had the most active role in cases G1 and G2, which makes the comments understandable. In other cases, I did not have a significant role in planning and implementing changes.

A researchers' role in cases might also have increased the use of the CEG as the users knew that we were testing the construct and would like to know about its functionality. Furthermore, as I was acquainted with the users, they may have wanted to please me by emphasising the positive feedback on the construct (see reflexivity in Yin 1994, 80). However, the fact that I worked closely with several users of the CEG gave me a chance to assess the seriousness of the above-mentioned risks. I consider neither of these to be very serious as we emphasised several times the importance of honest and sincere feedback on the construct. Furthermore, I didn't see any signs of exaggerated optimism and when having doubts, I insisted and helped the informant to find new aspects on the construct.

Using one language (Finnish) for collecting the data and another language for reporting caused some challenges concerning the reliability. For instance, translating the direct quotations into English may have caused some inaccuracies or even distortions which, in turn, have made it difficult to connect the original data with interpretations I have produced. However, for collecting, analysing and interpreting the data, only one language (Finnish) was used which prevents inaccuracies from occurring in those phases of the research. No interpretations or conclusions were made based on English material.

9.2.5 Summary

Probably the most significant factor increasing the reliability and the validity of the research was my interest in the research issue and motivation to discover new things and to enhance the knowledge related to the problem domain. The sincere will to understand cases and to generate information as truthful as possible guided me to systemacy and rigour. Table 55 summarises the main methods I applied in this research.

Table 55 Methods and principles of good quality research applied in the thesis

Ensuring the quality of the thesis		
Data and its collection	Analysis and interpretation	Reporting and general characteristics
• Investigator triangulation • Data source triangulation • Methodology triangulation • Establishing a chain of evidence • Developing case study data base • Colleague reviews • Data coding • Structured, yet also flexible interview guidelines • Many cases of both the same and different nature	• Pattern-matching • Explanation building • Finding rival explanations and disconfirming own interpretations • Using replication logic • Independent interpretation of two researchers (theory and investigator triangulation) • Group analysis and colleague reviews • Working with research teams • Using structured methods (e.g., Atlas) • Informant reviews • Comparing the research and its results with existing knowledge	• Thorough reporting of information • Rigorous and accurate representation of empirical data • Proper research design • Emergent research design and responsive approach • Proven significance of the research issue • Clear scope definition combined with flexibility

9.3 Issues for further research

This research supported the notion that project assessment is a difficult task and that which is even more difficult is to evaluate which role a certain tool may have in the project success or failure. Multiple realities are evident as the interviews also revealed. The potential effect of using proper tools and techniques in change projects is still an unexplored problem domain.

This reveals at least two issues for further research. The first is to study change project assessment methodology and to develop new constructs for assessing the success of a development effort. One interesting question could be how to carry out the assessment in a way that facilitates and enhances organisational learning and thus increases the probability of success in the future.

Another intriguing question would be to study the potential effect of different kinds of tools and techniques on the project success, in general. For instance, people's attitudes towards tools in different levels of the organisation, the approach and methods in designing and developing new tools and the learning process would be interesting issues.

Innovation implementation and adoption is the third emerging new issue to be researched further. Lack of time, line responsibilities, wrong timing of introduction and insufficient training and support from the organisation seemed to be the most important factors causing a modest use of the CEG. However, people who did not have line responsibilities, who were responsible for the development of their organisation in general and whose organisations supported the use of the CEG used it more than others. The question how to succeed in introducing and applying new constructs and tools in organisations remains open. One topic for further research would thus be innovation implementation and solving the problem of passive use of new tools in organisations.

10 REFERENCES

Aaltonen, P., Ikävalko, H., Mantere, S., Teikari, V., Ventä, M. and Währm, H. 2001. From Strategy to Implementation – A Research of Strategy Implementation in 12 Organisations in Finland (in Finnish). Helsinki, Helsinki University of Technology, Department of Industrial Management.

Abrahamso, E. 2000. Change Without Pain. Harvard Business Review, July-August 2000: 75-79.

Ackerman, L. S. 1982. Transition Management: An In-Depth Look at Managing Complex Changes. Organizational Dynamics, Summer 1982: 46-67.

Adler, P. S. and Shenbar, A. 1990. Adapting Your Technological Base: The Organisational Challenge. Sloan Management Review, Fall 1990: 25 – 37.

Aguinis, H. 1993. Action Research and Scientific Method: Presumed Discrepancies and Actual Similarities. Journal of Applied Behavioral Science, Vol. 29, No. 4: 416-432.

Ansoff, H. I. 1984. Implanting Strategic Management (translated into Finnish). Keuruu, Otava.

Arbnor, I. and Bjerke, B. 1997. Methodology for Creating Business Knowledge. Thousand Oaks, Sage Publications.

Argyris, C. 1985. Strategy, Change and Defensive Routines. Massachusetts, Pitman Publishing Inc.

Argyris, C. and Schon, D. A. 1991. Participatory Action Research and Action Science Compared: A Commentary. In Whyte W. F. (ed.), Participatory Action Research: 85-96. London, Sage.

Argyris, C., Putnam, R. and Smith, D. M. 1985. Action Science. San Francisco, Jossey-Bass.

Babüroglu, O. N. and Ravn, I. 1992. Normative Action Research. Organization Studies, Vol. 13, No. 1: 19-34.

Barker, B. 1998. The Identification of Factors Affecting Change Towards Best Practice in Manufacturing Organisations. Management Decision 36/8: 549-556.

Beer, M., Einestadt, R. A. and Spector, B. 1990a. The Critical Path to Corporate Renewal. Boston (MA), Harvard Business School Press.

Beer, M., Einestadt, R. A. and Spector, B. 1990b. Why Change Programs Don’t Produce Change. Harvard Business Review, November-December.

Boddy, D. and Buchanan, D. A. 1992. Take the Lead: Interpersonal Skills for Project Managers. Cornwall (UK), Prentice Hall International Ltd.

Bourke, W. W. 1987. Organisation Development: A Normative View. Reading (Ma), Adison-Wesley.

Buchanan, D. and Huczynski, A. 1997. Organizational Behaviour, Third edition. London, Prentice Hall.

Buhanist, P. 2000. Organisational Change, Development Efforts and Action Research. Doctoral Dissertation, Helsinki University of Technology.

Bullock, R. J. and Batten, D. 1985. It's Just a Phase We´re Going Through: A Review and Synthesis of OD Phase Analysis. Group & Organization Studies, Vol. 10, No. 4: 383-412.

Byars, L. L. 1991. Strategic Management: Formulation and Implementation, Third edition. Harper Collins.

Carnall, C. A. 1990. Managing Change in Organizations. Englewood Cliffs, Prentice Hall.

Chisholm, R. F. and Elden, M. 1993. Features of Emerging Action Research. Human Relations, Vol. 46, No. 2: 275-298.

Cleland, D. I. 1994. Project Management: Strategic Design and Implementation, Second edition. New York, McGraw-Hill.

Collins, J. C. and Porras, J. I. 1996. Building Your Company's Vision. Harvard Business Review, September-October: 65-77.

Cummings, T. G. and Worley, C. G. 1993. Organisation Development and Change, Fifth edition. St Paul (MN), West Publishing Company.

Denton, D. K. 1996. Four Simple Rules for Leading Change. Empowerment in Organizations, Vol. 4, No 4: 5-9.

Dyer, W. G. and Wilkins, A. L. 1991. Better Stories, Not Better Constructs, to Generate Better Theory; A Rejoinder to Eisenhardt. Academy of Management Review, Vol. 16, No. 3: 613-619.

Eden, C. and Huxham, C. 1996. Action Research for Management Research. British Journal of Management, Vol. 7: 75-86.

Eichelberger, K. A. 1994. Leading Change through Projects. Quality Progress, Vol. 27, No. 1: 87-90.

Eisenhardt, K. 1989a. Building Theories from Case Study Research. Academy of Management Review, Vol. 14, No. 4: 532-550.

Eisenhardt, K. 1989b. The Aftermath of Organisational Decline: a Longitudinal Study of the Strategic and Managerial Characteristics of Declining Firms. Academy of Management Journal, Vol. 32, No. 3: 577-605.

Elden, M. and Chisholm, R. F. 1993. Emerging Varieties of Action Research: Introduction to the Special Issue. Human Relations, Vol. 46, No. 2: 121-141.

Ellram, L. M. 1996. The Use of the Case Study Method in Logistics Research. Journal of Business Logistics, Vol. 17, No. 2: 93-137.

Forrester, J. W. 1969. Urban Dynamics. Massachusetts, The M.I.T. Press.

French, W. L. and Bell, C. H. 1973. Organization Development – Behavioral Science Interventions for Organization Improvement. Englewood Cliffs (NJ), Prentice-Hall.

French, W. L. and Bell, C. H. 1999. Organization Development – Behavioral Science Interventions for Organization Improvement, Sixth edition. Englewood Cliffs (NJ), Prentice-Hall.

Gersick, C. J. G. 1988. Time and Transition in Work Teams: Toward a New Model of Group Development. Academy of Management Journal, Vol. 31, No. 1: 9-41.

Glaser, B. and Strauss, A. 1967. The Discovery of Grounded Theory: Strategies of Qualitative Research. Hawthorne, Aldine Publishing Company.

Goodstein, L. D. and Burke, W.W. 1997. Creating Successful Organization Change. In Carnall, C. A. Strategic Change: 159-173. Oxford, Butterworth-Heinemann.

Greenwood, D. J., Whyte, W. F. and Harkavy, I. 1993. Participatory Action Research as a Process and as a Goal. Human Relations, Vol. 46, No. 2: 175-191.

Guba, E. G. and Lincoln, Y. S. 1994. Competing Paradigms in Qualitative Research. In Denzin, N. K. and Lincoln, Y. S. (Eds.), Handbook of Qualitative Research: 105-118. California, Sage Publications.

Gummesson, E. 1991. Qualitative Methods in Management Research, Revised edition. Newbury Park, Sage Publications.

Gummesson, E. 1993. Case Study Research in Management: Methods for Generating Qualitative Data, Second revised version of unpublished preliminary script. Stockholm University, Department of Business Administration.

Hammer, M. and Champy J. 1993. Reengineering the Corporation: a Manifesto for Business Revolution. New York, Harper Collins Publishers.

Harris. S. G. and Sutton, R. I. 1986. Functions of Parting Ceremonies in Dying Organisations. Academy of Management Journal, Vol. 29, No. 1: 5-30.

Holland, L. D. 1985. Management by Resources: Making the Professional Office Work. Journal of Systems Management, Vol. 36, No. 2: 8-13.

Huberman, A. M. and Miles, M. B. 1994. Data Management and Analysis methods, In Denzin, N. K. and Lincoln, Y. S. (Eds.), Handbook of Qualitative Research: 428-444. California, Sage Publications.

Ishikawa, K. 1985. What is Total Quality Control? The Japanese Way. Englewood Cliffs, Prentice-Hall.

Jick T. D. 1979. Mixing Qualitative and Quantitative Methods: Triangulation in Action. Administrative Science Quarterly, December 1979, Vol. 24: 602-611.

Juran, J. M. 1992. Juran on Quality by Design: The New Steps for Planning Quality into Goods and Services. New York, The Free Press.

Järvenpää, E. and Eloranta, E. 2000. Organizational Culture and Organizational Development. In W. Karwowski (Ed.) International Encyclopedia of Ergnonomics and Human Factors. Taylor and Francis Inc.

Kanter, R. M., Stein, B. A. and Jick, D. T. 1992. The Challenge of Organizational Change. New York, The Free Press.

Kaplan, R. S. and Norton, D. P. 2001. The Strategy Focused Organisation – How Balanced Scorecard Companies Thrive in the New Business Environment. Boston, Harvard Business School Press.

Kasanen, E., Lukka, K. and Siitonen, A. 1991. The Constructive Research Approach in Economics (In Finnish). The Finnish Journal of Business Economics, Vol. 40: 301-329.

Kasanen, E., Lukka, K. and Siitonen, A. 1993. The Constructive Approach in Management Accounting Research. Journal of Management Accounting Research, Fall 1993: 243-264.

Kast, F. E. and Rosenzweig, J. E. 1985. Organization and Management. A Systems and Contingency Approach, Fourth edition. Singapore, McGraw-Hill Book Company.

Katzenbach, J. 1995. Real Change Leaders. London, Nicholas Brealey Publishing.

Kaufman, R. S. 1992. Why Operations Improvement Programs Fail: Four Managerial Contradictions. Sloan Management Review, Fall 1992: 83-93.

Kerzner, H. 1989. Project Management, a System Approach to Planning, Scheduling and Controlling, Third edition. New York, Van Nostrand Reinhold.

Kimmons, R. L. 1990. Project Management Basics – A Step by Step Approach. USA, Marcel Dekker Inc.

Klein, K. J. and Sorra, J. P. 1996. The Challenge of Innovation Implementation. Academy on Management Review, Vol. 21, No. 4: 1055-1080.

Kleiner, B. H. and Corrigan, W. A. 1989. Understanding Organisational Change. Leadership & Organization Development Journal, Vol. 10, No 3: 25-31.

Koivula, A. 1998. Knowledge Commercialization – A Case Study of the Process of Creation of the Team Coach Plus Knowledge Product. Doctoral Dissertation, Helsinki University of Technology, Department of Industrial Management.

Kotter, J. P. 1988. The Leadership Factor. New York, The Free Press.

Kotter, J. P. 1995. Why Transformation Efforts Fail. Harvard Business Review, Vol. 73, No. 2: 59-67.

Kotter, J. P. 1996. Leading Change. Harvard Business School Press.

Laakso, T. 1997. Performance Evaluation and Process Interventions – A Method for Business Process Development. Doctoral Dissertation, TAI Research Centre, Helsinki University of Technology.

Lanning, H. 1995. The Implementation of Change - The Most Common Problems in Change Projects and How to Avoid Them (in Finnish). Helsinki University of Technology, Industrial Economics and Work Psychology, Report No. 165.

Lanning, H., Kutilainen, P. and Salminen, A. 1998. Change Project Manager's Handbook: an Effective Tool for Change Project Management. The Proceedings (CD-ROM) of PMI'98 Congress.

Lanning, H., Roiha, M. and Salminen, A. 1999. Guide Book to Change – How to Develop Organisations in an Effective And Controlled Manner (in Finnish). Helsinki, Kauppakaari Oyj.

Leppänen, A., Launis, M., Lehtelä, J., Auvinen, E., Kukkonen, R. and Seppälä, P. 1991. Participative Planning (in Finnish). Helsinki, Finnish Institute of Occupational Health.

Lewin, K. 1946. Action Research and Minority Problems. Journal of Social Issues 2: 34-46.

Lewin, K. 1952. Frontiers in Group Dynamics in Field Theory in Social Science. Selected Theoretical Papers, Tavistock Publications: 188-237.

Lewis, D. 1996. The Organizational Culture Saga – from OD to TQM; a Critical Review of the Literature. Part 1- Concepts and Early Trends. Leadership and Organization Development Journal, Vol. 17, No. 1: 12-19.

Lewis, J. P. 1993. The Project Manager's Reference, a Comprehensive Guide to Project Planning, Scheduling, Evaluation, Control & Systems. Chicago, Probust Publishing Company.

Lillrank, P. 1995. The Transfer of Management Innovations from Japan. Organization Studies, 16/6: 971-989.

Lippitt, R., Watson, J. and Westley, B. 1958. The Dynamics of Planned Change. New York, Harcourt, Brace & World.

Marshak, R. J. 1993. Managing the Metaphors of Change. Organizational Dynamics, Summer 1993: 44-56.

Marshall, C. and Rossman, G. B. 1995. Designing Qualitative Research, Second edition. Thousand Oaks, Sage Publications.

Mason, J. 1996. Qualitative Researching. London, Sage Publications.

Maxwell, J. A. 1996. Qualitative Research Design. An interactive Approach. Thousand Oaks, Sage Publications.

McElroy, W. 1996. Implementing Strategic Change through Projects. International Journal of Project Management, Vol. 16, No 6: 325-329.

Meredith, J. 1993. Theory Building through Conceptual Methods. International Journal of Operations & Production Management, Vol. 13, No. 5: 3-11.

Mikkelsen, H., Olsen, W. and Riis, J. O. 1991. Management of Internal Projects. International Journal of Project Management, Vol. 9, No 2: 77-81.

Miles, R. E., Coleman, H. J,. and Creed, W. E. 1995. Keys To Success in Corporate Redesign. California Management Review, vol. 37, No. 3:128-145.

Mintzberg, H. and Westley, F. 1992. Cycles of Organizational Change. Strategic Management Journal, Vol. 13 (Special Issue): 39-59.

Moosbrucker, J. B. and Loftin, R. D. 1998. Business Process Redesign and Organizational Development. Journal of Applied Behavioral Science, Vol. 34, Issue 3: 286-305.

Nielsen, J. 1993. Usability Engineering. Cambridge, Academic Press.

Niiniluoto, I. 1980. Introduction to the Philosophy of Science (in Finnish). Keuruu, Otava.

Niiniluoto, I. 1992. The Aim and Structure of Applied Research. An unpublished manuscript.

Pankakoski, M. 1998. Knowledge Sharing and Value Reproduction – The Work Flow Game as a Case Example. Doctoral Dissertation, Report No. 6, Work and Organizational Psychology, Helsinki University of Technology.

Partington, D. 1996. The Project Management of Organisational Change. International Journal of Project Management, Vol. 14, No. 1: 13-21.

Pasmore, W. A. 1994. Creating Strategic Change - Designing the Flexible, High-Performing Organization, New York, John Wiley & Sons.

Patton, M. 1990. Qualitative Evaluation and Research Methods, Second edition. London, Sage Publications.

Peter, J. P. and Olson, J. C. 1983. Is Science Marketing? Journal of Marketing. Vol. 47, Fall 1983: 111-125.

Peters, T. J. and Waterman R. H. Jr. 1982. In Search of Excellence – Lessons from America's Best-Run Companies. New York, Harper and Row Publishers.

Pinfield, L. T. 1986. A Field Evaluation of Perspectives on Organizational Decision Making. Administrative Science Quarterly, Vol. 31, No. 3: 365-388.

Pinto, J. K. and Kharbanda, O. P. 1995. Successful Project Managers – Leading Your Team to Success. New York, Van Nostrand Reinhold.

Pinto, J. K. and Slevin, D. P. 1987. Critical Factors in Successful Project Implementation. IEEE Transactions on Engineering Management, Vol. EM-34, No. 1: 22-27.

PMBOK, 1996. A Guide to Project Management Body of Knowledge. Upper Darby (PA), Project Management Institute.

Rafii, F. and Carr, L. P. 1997. Why Major Change Programs Fail: an Integrative Analysis. Journal of Cost Management, Jan-Feb, Vol. 11, No. 1: 41-45.

Rapoport, R. N. 1970. Three Dilemmas in Action Research. Human Relations, Vol. 23, No. 6: 499-513.

Rigg, M. 1993. Organization Change and Individual Behavior. Industrial Engineering, Vol. 25, No. 12: 12-13.

Rogers, E. 1983. Diffusion of Innovations, Third edition. New York, The Free Press.

Salminen, A. 1995. Assessment of Business Process Development Projects (in Finnish). Helsinki University of Technology, Industrial Economics and Work Psychology, Report No. 163.

Salminen, A. 2000. Implementing Organisational and Operational Change – Critical Success Factors of Change Management. Doctoral Dissertation, Helsinki University of Technology, Executive School of Industrial Management.

Salminen, A. and Perkiömäki, P. 1998. Evaluation of "Kaikki peliin" Productivity Campaign (in Finnish). Publications of Ministry of Trade and Industry, Oy Edita Ab.

Salminen, A., Lanning H. and Roiha M. 1998. Change Project Management – a New Context. Proceedings of IPMA 14th World Congress on Project Management, Ljubljana, International Project Management Association IPMA: 521-527.

Salminen, A., Lanning, H. and Roiha, M. 1997. Participatory Approach of Implementing Change. Proceedings of the 13th International conference on CAD/CAM Robotics & Factories of the Future: 635-640.

Salminen, A., Rintala, K and Korpi-Filppula, M. 2000. The Good and the Bad of Change Projects – Report on National Study of Organisational and Operational Change (in Finnish). Espoo, Helsinki University of Technology, Industrial Economics and Work and Organisational Psychology, Working Paper No 23.

Schaffer, R. H. and Thomson, H. A. 1992. Successful Change Programs Begin with Results. Harvard Business Review, Vol. 70, No 1: 80 - 89.

Schein, E. H. 1987. Process Consultation, Volume II, Addison-Wesley.

Schein, E. H. 1992. Organizational Culture and Leadership, Second edition. San Francisco, Jossey-Bass.

Scherr, A. L. 1989. Managing for Breakthroughs in Productivity. Human Resource Management, Vol. 28, No. 3: 403-424.

Schneider, D. M. and Goldwasser, C. 1998. Be a Model Leader of Change. Management Review, Vol. 87, Issue 3: 41-45.

Senge, P. M. 1990. The Fifth Discipline: The Art & Practice of The Learning Organisation. New York, Doubleday.

Sharrat, J. and McMurdo, A. 1991. Managing the Information Explosion. Bradford, MCB University Press.

Stace, D. and Dunphy, D. 1994. Beyond the Boundaries: Leading and Re-creating the Successful Enterprise. Sydney, McGraw-Hill Book Company.

Stake, R. 1995. The Art of Case Study Research. San Francisco, Sage Publications.

Stoddard, D. and Järvenpää, S. 1995. Business Process Redesign: Tactics for Managing Radical Change. Journal of Management Information Systems, Vol. 12, No. 1: 81-107.

Susman, G. I. and Evered, R. D. 1978. The Assessment of the Scientific Merits of Action Research. Administrative Science Quarterly, Vol. 23: 582-602.

Tampoe, M. and Thurloway, L. 1993. Project Management: The Use and Abuse of Techniques and Teams. International Journal of Project Management, Vol. 11, No. 4: 245-250.

Taylor, W. F. 1911. Principles of Scientific Management. New York and London, Harper & Brothers Publishers.

Teng, J. T., Jeong, S. R and Grover, V. 1998. Profiling Successful Reengineering Projects. Communications of the ACM, Vol. 41, No. 6: 96-102.

Thomas, K. W. and Tymon, W. G. 1982. Necessary Properties of Relevant Research: Lessons from Recent Criticisms of the Organizational Sciences. Academy of Management Review, Vol. 7, No. 3: 345-352.

Tornatzky, L. G. and Fleischer, M. 1990. The Process of Technological Innovation. Lexington (Mass.) Lexington Books.

Tulloch, A. 1993. The Strategic Management of Change. Management Decision, Vol. 31, No. 3: 62-64.

Turner, R. J. 1999. The Handbook of Project Based Management, Second edition. London, McGraw-Hill.

Turner, R. J. and Cochrane R. A. 1993. Goals-and-methods Matrix: Coping with Ill-defined Goals and/or Methods of Achieving Them. International Journal of Project Management, Vol. 11, No. 2: 93-102

Weber, M. 1947. The Theory of Social and Economic Organisation (edited by Talcott Parsons). New York, Oxford University Press.

Wysocki, R. K., Beck, R. Jr. and Crane, D. B. 1995. Effective Project Management. New York, John Wiley & Sons, Inc.

Yin, R. K. 1984. Case Study Research, Designs and Methods. Thousand Oaks, California, Sage.

Yin, R. K. 1994. Case Study Research, Designs and Methods, Second edition. Thousand Oaks, California, Sage.

Appendix 1, Definitions of the terms and abbreviations

To be able to answer the research questions, it is important to define the following terms. Terms imperative for the understanding of the research questions as well as terms that are not unambiguously defined or commonly agreed on by different researchers are defined. Abbreviations are also explained here.

Table 56 Definitions of the most important terms and abbreviations used in the thesis

Term	Definition used in the thesis
Change	In this thesis, word "change" covers different kinds of change efforts in organisations in the broadest sense of the word. Change thus refers to organisational, operational, cultural and structural changes as well as changes in systems and people's behaviour. The term is thus not placed specifically under any school of thought in the field of changing or developing organisations. In addition, phrase "change project" is used referring to all kinds of changes in organisations carried out as projects.
Comprehensive (construct)	The construct covers all phases of change from the beginning of the project to the termination and assessment of it.
Generic (construct)	The construct is not designed for any particular kind of organisational changes, e.g., only for implementing Just In Time (JIT) solutions in production.
Practical (construct)	Practical means that the construct is not only e.g., a model or a framework but also a tangible artefact with proven usefulness in action.
Successful organisational change	In assessing the project success I use five different criteria: (1) did the project cause any evident or even measurable operational or financial results, (2) were predefined goals achieved, (3) was the project terminated in schedule, (4) was the project terminated within the budget and (5) how was the project success perceived by key stakeholders, i.e., customers, top management, project team and other employees (see Salminen 2000, 13-16 and 134-135).
Abbreviation	
AR	Action research
CEG	Change project managers E-Guide
E	An example in the CEG
G	A group work in the CEG
I	Interview
IJPM	International Journal of Project Management
N/A	The information was either no available or not applicable
PMBOK	Project management body of knowledge
PMJ	Project Management Journal
Q	Questionnaire
T	A document template in the CEG
WBS	Work breakdown structure

Appendix 2, Interview guideline used in case interviews in the preliminary study

The following issues were discussed during the interviews. Checklists were talked over systematically. However, also emerging issues were welcome.

- How did problems occur in different phases of the project?
    - Active resistance?
    - Passive behaviour?
    - Practical problems?
- Describe the prevailing conditions and feelings in the organisation
    - Feelings and atmosphere?
    - Knowledge and thoughts?
    - Work environment?
    - Other conditions?
- What could have caused the problems?
    - Leadership, communication, measurement, resources, the way of organising etc.
- A checklist for discussing problems
    - What was the problem?
    - How did the problem occur?
    - When did it occur?
    - Please, give an example
    - What were the consequences of the problem?
    - Where there any signs of the problem before it came up?
    - Could the problem have somehow been avoided?
    - What was done to solve the problem?
    - Was something important missed?
    - Was something done incorrectly?
    - How could the situation be handled better next time?
- What were the key success factors in different phases of the change?

Appendix 3, Questionnaire in market survey A

Name and company details:

The field of industry?

1. Consulting
2. Industry
3. Construction
4. Service

Your current development activities

1. Responsible for a change project
2. As a team member
3. Interested
4. No current interest

I am familiar with change management theories

1. I know well
2. I know reasonably well
3. I know something
4. I know very little
5. I don’t know anything

I have heard about electronic tools for change project management: yes/no

I have experience on using electronic tools for change project management: yes/no

I am most interested in:

1. A paper version
2. An electronic version
3. Both

It should be possible to open and to use the product with the following software:

1. MS Word
2. MS Excel
3. MC Power Point
4. Other, what?

I am interested in and would like to learn more about the following issues (0 don’t know, 1 not interested, 2 little interest, 3 some interest, 4 much interest, 5 very much interest)

0 1 2 3 4 5 Motivating people
0 1 2 3 4 5 Consolidating changes
0 1 2 3 4 5 Team work
0 1 2 3 4 5 Current state analysis
0 1 2 3 4 5 Project assessment
0 1 2 3 4 5 Training
0 1 2 3 4 5 Communication
0 1 2 3 4 5 Leading change
0 1 2 3 4 5 Participation
0 1 2 3 4 5 Project manager's responsibilities
0 1 2 3 4 5 Project organisation and resources

What is the importance of the following characteristics (1 not important, 2 not very important, 3 somewhat important, 4 important, 5 very important)

1. User friendliness/usability
2. Using Windows operating system
3. Graphic interface
4. Possibility to modify the structure of the product
5. Possibility to modify individual tools and templates
6. Simple, modular structure with links
7. Document templates for project planning
8. Easy project documentation
9. Presentation slides

The first choice of the language: Finnish/Swedish/English

The second choice of the language: Finnish/Swedish/English

I would need training prior the use of a new product: yes/no

Would you like to take part in a short interview on the same issues: yes/no

Thank you.

Appendix 4, Interview guideline in market survey A

How long have you worked with change projects?

What kind of facilitating material have you used?

- Why?
- What have you missed?
- Which is the most important factor in choosing the material?
- Would you need training to use new material on change projects?

Which would be the best channel for marketing a new product for change project managers?

What are your opinions on the following issues?

- The style of writing
- Illustrations
- The length of the product
- Software
- Other important issues concerning potential material

Appendix 5, Questionnaire in market survey B

The size of your company (employees)

5. 1-5
6. 6-20
7. 21-100
8. 101-500
9. over 500

The field of industry?

10. Consulting
11. Industry
12. Construction
13. Service

Is there enough information available on change project management?

1. Yes
2. No
3. I don’t know

How important is the role of training material for a successful change project?

1. Not important
2. Important
3. Very important
4. I don’t know

How important do you consider the following material for change projects (1 = not important, 5 = very important)

1 2 3 4 5 Theory
1 2 3 4 5 Practical examples
1 2 3 4 5 Clear instructions for actions
1 2 3 4 5 Finnish language
1 2 3 4 5 Novelty
1 2 3 4 5 Price

I would need more information on the following issues (mark five most important)

- Modern business fads
- Assessing the current state
- Leading change
- Training as a part of change
- Motivating people
- Resource planning and allocation
- Responsibilities
- Project manager’s role
- Communication
- Participation
- Team work
- Dealing with change resistance and other problems
- Assessing the project
- Maintaining the change momentum
- Best practices of change management

I need practical and tangible tools or instructions for carrying out change projects.

Yes/No

The following modules would facilitate carrying out change projects, in particular (1=yes, 2=don't know, 3=no)

1 2 3 Detailed checklists
1 2 3 Planning templates
1 2 3 Other templates
1 2 3 Group work instructions
1 2 3 Games and rehearsals
1 2 3 A clear model for carrying out change
1 2 3 The chance to modify the structure
1 2 3 Training transparencies
1 2 3 Theory
1 2 3 Examples and cases
1 2 3 Stimulative illustration
1 2 3 Instructions for using the material

The most practical material would be:

On paper / electronic / both

If the product met your expectations how much would you be willing to pay for it?

The most common channel through which I receive information on management products:

- Journals
- Direct marketing
- Consultants and other professionals
- Colleagues
- Nowhere
- Something else, what:

How does your company purchase training material?

Please, write your name and the company your are working at.

I am willing to take part in a short interview (10-15 min.) Yes/No

Thank you.

Appendix 6, List of conferences

1. 15th IPMA World Congress on Project Management. 2000, London.
2. Industrial Engineering and Management congress. 1999, Helsinki.
3. International ISPQR Congress. 1998, Vaasa.
4. International PMI'98 Congress. 1998, California.
5. IPMA 14th World Congress on Project Management. 1998, Ljublijana.
6. Tenth International Working Seminar on Production Economics. 1998, Igls.
7. 13th International conference on CAD/CAM Robotics & Factories of the Future. 1997, Colombia.
8. International Conference on Industry, Engineering, and Management Systems. 1997, Florida.
9. International Ergonomics Association Congress. 1997, Tampere.
10. International conference on advances in production management systems. 1996, Kyoto.

Appendix 7, Interview guideline for testing the CEG

The interviews handled five main topics as shown in Table 57. The four core questions were followed by explanatory, more detailed questions that were used to provoke further discussion if needed.

The purpose of interviews in this research was to find out if CEG was used, what parts of it were useful, why were they useful, what were the perceived benefits of using it, the factors affecting the amount of use and, finally, what was the improvement potential in it. The interview guideline was designed by me together with a team colleague.

Table 57 Topics and some main questions that were handled in interviews

Topics	Questions
Experience	How do you feel about the CEG? The idea in general? What do you think about the CEG? Paper and CD-ROM combination, structure, parts and so on?
Contents and the amount of use	General comments on the contents and the amount of use What kind of information and in which format should it contain? How much was it used? Which parts were used, which were not? Did you find useful information? Which factors did further the use? Which factors did hinder the use? Was project manager the only user of the CEG?
Usability and structure	Was the structure of the CEG proper? Was it easy to find the information you needed? Did you have any problems with using the CEG? If yes, what kind of problems? Does it need more instructions, training and so on to be able to use the CEG? What should the structure be like?
Usefulness and effectiveness of the product	What was the perceived usefulness of the CEG? Did the CEG help you in your project? Did the CEG offer useful information in a useful format? What are the most important factors that have an influence on the usefulness and the effectiveness of the product?
Other issues	What were the perceived strengths and weaknesses of the CEG? What changes would you make? What would a better working CEG be like? What was the effect of the product itself compared to its dissemination methods on the use? The project model behind the CEG; does it work in a real life? Will you use the CEG in the future?

Appendix 8, Questionnaire for users of the CEG version 03

Background information

Name _____ Company _____

1. Your current assignment:_____

2. How old are you?

1	under 30
2	30-39
3	40-49
4	50-59
5	60-

2b. What was your experience on carrying out change projects prior to using the CEG?

1	No experience or knowledge
2	Basics in theory
3	1 project
4	1-3 projects
5	over 3 projects

3. What is your education?

4. Describe the project where you used the CEG

Objectives:

Schedule:

6. What was your own role in the project

1. A member of the steering committee
2. Project manager
3. A development team member
1. A project team member
2. Consultant
3. Something else, what:_____

7. Which version of the CEG have you used prior to answering this questionnaire?

8. What were the three most important issues you would have needed the CEG for? How did the CEG answer the needs?

	Not useful					Very useful
1.	1	2	3	4	5	6
2.	1	2	3	4	5	6
3.	1	2	3	4	5	6

1. Contents and the use of the CEG

1a. Choose the option, which describes your opinion best.

Which phases or modules of the CEG have you used? (No at all → Very much)							What was the benefit of using the phase or module? (No benefit → Significant benefit)					
1	2	3	4	5	6	Need for change	1	2	3	4	5	6
1	2	3	4	5	6	Analysis	1	2	3	4	5	6
1	2	3	4	5	6	Establishing the project	1	2	3	4	5	6
1	2	3	4	5	6	Key persons and project organisation	1	2	3	4	5	6
1	2	3	4	5	6	Goals and vision	1	2	3	4	5	6
1	2	3	4	5	6	Project plan	1	2	3	4	5	6
1	2	3	4	5	6	Motivation	1	2	3	4	5	6
1	2	3	4	5	6	Follow up and control	1	2	3	4	5	6
1	2	3	4	5	6	Development groups	1	2	3	4	5	6
1	2	3	4	5	6	Communication	1	2	3	4	5	6
1	2	3	4	5	6	Training	1	2	3	4	5	6
1	2	3	4	5	6	Practical changes	1	2	3	4	5	6
1	2	3	4	5	6	Termination	1	2	3	4	5	6
1	2	3	4	5	6	Assessment	1	2	3	4	5	6
1	2	3	4	5	6	Group work methods	1	2	3	4	5	6
1	2	3	4	5	6	Wall chart techniques	1	2	3	4	5	6
1	2	3	4	5	6		1	2	3	4	5	6
1	2	3	4	5	6	Map of all phases	1	2	3	4	5	6
1	2	3	4	5	6	TO-DO lists	1	2	3	4	5	6
1	2	3	4	5	6	Short descriptions	1	2	3	4	5	6
1	2	3	4	5	6	Checklists	1	2	3	4	5	6
1	2	3	4	5	6	Tasks	1	2	3	4	5	6
1	2	3	4	5	6	Minicases	1	2	3	4	5	6
1	2	3	4	5	6	Document templates	1	2	3	4	5	6
1	2	3	4	5	6	Examples	1	2	3	4	5	6
1	2	3	4	5	6	Group works	1	2	3	4	5	6
1	2	3	4	5	6	Something else, what:	1	2	3	4	5	6

1b. Please, give more comments on the contents and the use of the CEG

1c. For what purposes did you use the CEG?

1d. Was something essential missing from the CEG?

1e. Was there something useless in the CEG?

2. Usefulness and usability of the CEG

2a. What was the benefit of using a phase or a module?

	No benefit					Significant benefit
Usefulness in carrying out the project	1	2	3	4	5	6
Offering practical tools for project planning	1	2	3	4	5	6
Offering practical tools for project implementation	1	2	3	4	5	6
CEG's influence on project's success	1	2	3	4	5	6
Carrying out the project efficiently and in control	1	2	3	4	5	6
Remembering and keeping the focus on critical actions	1	2	3	4	5	6
Preventing problems	1	2	3	4	5	6
Offering structure and phases for the project	1	2	3	4	5	6
Help making decisions	1	2	3	4	5	6
Saving time and effort	1	2	3	4	5	6
Learning new things about change projects	1	2	3	4	5	6
Improving organisation’s development culture	1	2	3	4	5	6
Motivating project personnel	1	2	3	4	5	6
Ensuring sufficient resources	1	2	3	4	5	6
Adhering to the schedule	1	2	3	4	5	6
Something else, what:	1	2	3	4	5	6

2 b. Please, give more comments on the usefulness and the benefits of using the CEG

2c. How successful was the CEG in the following issues?

	Total failure					Very successful
General						
Easiness to apply CEG in your own project	1	2	3	4	5	6
Easiness to modify the material	1	2	3	4	5	6
Instructions	1	2	3	4	5	6
Training	1	2	3	4	5	6
User support after training	1	2	3	4	5	6
Applying the CEG in your own project	1	2	3	4	5	6
Manual's and CD-ROM's co-operation	1	2	3	4	5	6
The ability to modify the CEG	1	2	3	4	5	6
Manual						
Easiness to use	1	2	3	4	5	6
The contents (information)	1	2	3	4	5	6
Structure (the order of which the information is presented)	1	2	3	4	5	6
Clearness and attractiveness	1	2	3	4	5	6
Easiness of finding information	1	2	3	4	5	6
Simplicity	1	2	3	4	5	6
CD-ROM						
Easiness to use	1	2	3	4	5	6
The contents (information)	1	2	3	4	5	6
Structure (the order of which the information is presented)	1	2	3	4	5	6
Clearness and attractiveness	1	2	3	4	5	6
Easiness of finding information	1	2	3	4	5	6
Simplicity	1	2	3	4	5	6
Technical functionality	1	2	3	4	5	6
The CEG in my own organisation						
My organisation's tangible support to use the CEG	1	2	3	4	5	6
My organisation's encouragement and incentives to use the CEG	1	2	3	4	5	6
The value fit between my organisation and the things presented in the CEG	1	2	3	4	5	6

2d. Please, give more comments on the usability and the structure of the CEG.

2e. Which factors decreased your amount of using the CEG?

	Strongly disagree					Strongly agree
CEG would not have helped me carry out the change project	1	2	3	4	5	6
CEG did not correspond my way of carrying out change projects	1	2	3	4	5	6
CEG was difficult to use	1	2	3	4	5	6
The contents was already familiar to me	1	2	3	4	5	6
User training was insufficient	1	2	3	4	5	6
User support after training was insufficient	1	2	3	4	5	6
My organisation did not support the use of the CEG	1	2	3	4	5	6
My organisation failed to make the CEG a part of normal operation procedures	1	2	3	4	5	6
The values of my organisation were not congruent with things emphasised in CEG	1	2	3	4	5	6
Other reasons: Reasons that had mostly to do with myself and my situation	1	2	3	4	5	6

2f. Please, give more comments on factors affecting the amount of using the CEG.

2g. Mention two factors that increased and two factors that would further increase you amount of using the CEG.

2h. Which were CEG's main strengths and area for improvement?

2i. What kind of training did you have on the CEG? Please mark all correct lines.

- No training
- Separate training on change projects (4-8 h)
- Basics by an over head projector
- Had the manual at hand in the training
- CD-ROM was introduced by a data projector
- Had a PC terminal in the training
- Received practical training of using the CD
- Tasks concerning my own project were completed

3. Novelty of the CEG

3a. Do you know any corresponding product: Yes/No

3b. If you do know, what is the product?

Compare the contents and the usability of the CEG and the other product.

3c. What is the novelty and the usefulness of the CEG?

	Strongly disagree					Strongly agree
There is a great need for the CEG on the market	1	2	3	4	5	6
The CEG as a whole is a new product on the market	1	2	3	4	5	6
The CEG offers new information about carrying out change projects	1	2	3	4	5	6
The CEG offers new tools for carrying out change projects	1	2	3	4	5	6
The CEG is more useful than corresponding products	1	2	3	4	5	6
The CEG is easier to use than corresponding products	1	2	3	4	5	6
Some other value, what?	1	2	3	4	5	6

3d. Please, give more comments on the need and the novelty of the CEG.

3e. Which were the most significant changes compared to the previous version of the CEG?

3f. Has the CEG become a tool, which you will use in your future change projects? Yes/No

3g. What are your future plans regarding the use of the CEG?

3h. Any other comments?

Thank you!

Appendix 9, Instructions for the use of the CEG version 03

After copying the files from the CD-ROM disc into the users hard disc all files can be browsed in File Manager like any other file in the drive (Figure 18). Folders A_VALMISTELU, B_SUUNNITTELU, C_TOTEUTUS ja D_VAKIINNUTTAMINEN represent four main project phases. However, in terms of CEG phases, A_VALMISTELU contains phases 1-4, B_SUUNNITTELU phases 5-6, C_TOTEUTUS phases 7-12 ja D_VAKIINNUTTAMINEN phases 13-14.

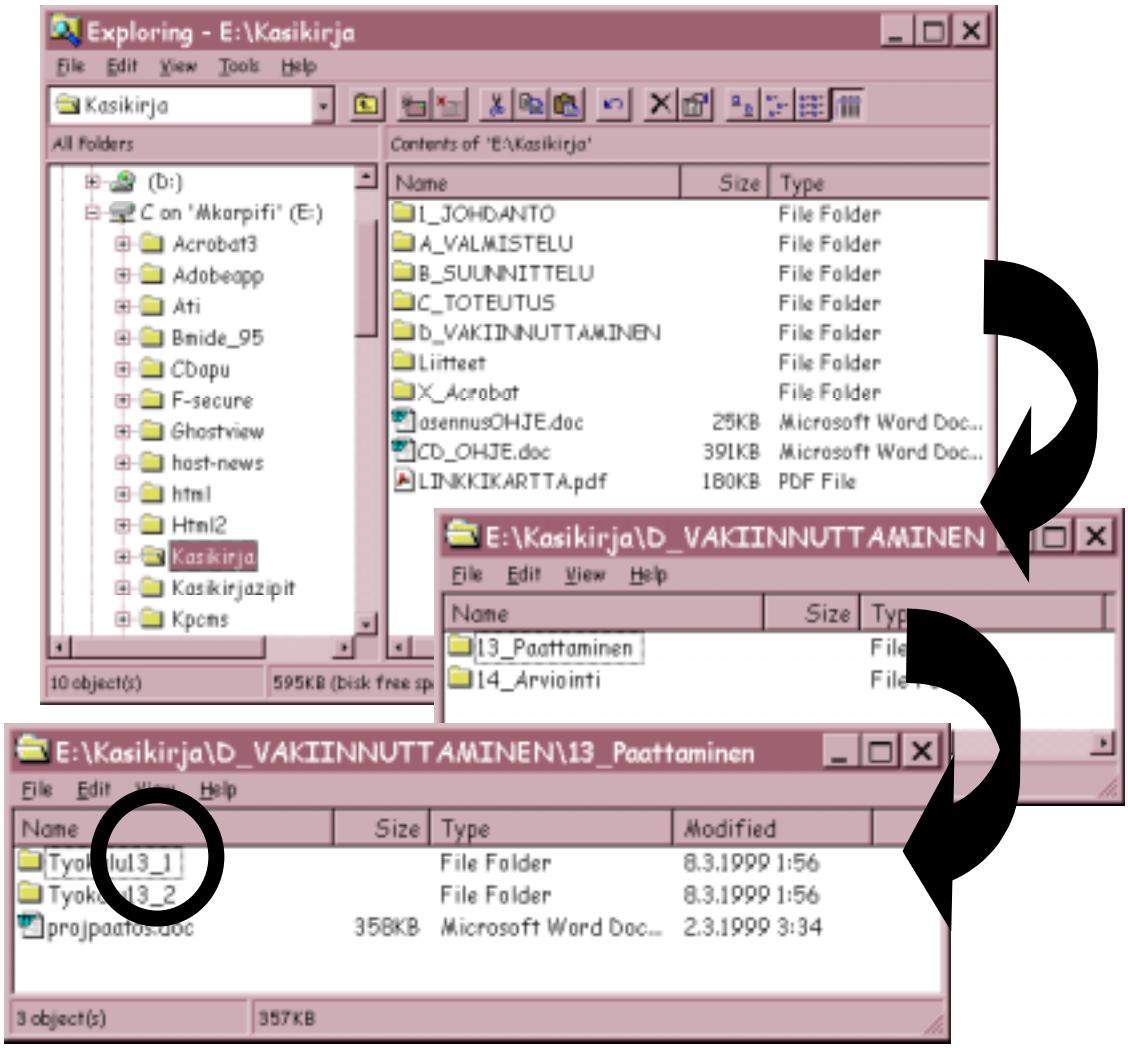

Figure 18 Structure of the CEG version 03 files in Windows File Manager or Explorer

There is a separate folder for each of the14 phases in the CEG containing the basic document (.doc) for the phase and separate sub-folders for each tool in that particular phase. The basic Word document contains exactly the same information as in the manual under the same phase of the CEG. In other words, if needed or preferred, the user of the CEG does not have to use the manual at all.

There are two main ways to search, browse and open files in the CEG. The traditional way is to browse and open documents by using traditional Windows tools, such as Explorers, File

Managers or the software by which the document is originally made. However, another way to do it is to use the LINKMAP.PDF (LINKKIKARTTA.PDF IN FINNISH) file located in the root folder of the CEG. Linkmap uses Adobe Acrobat Reader –viewing software, which can be installed from the CD-ROM disc or from the Internet[45]. Installation instructions can be found both in the "Kasikirja" folder and on the cover page of the CD-ROM cover. Documents open by double clicking them in the Adobe Acrobat Reader view. The use of the LINKMAP is described in more detail below.

The MAP OF ALL PHASES acts as the basic tool for searching and opening documents. To make the search and identification easier, each of the main project phases has a colour of its own. Yellow is for INITIAL PHASE, green is for PLANNING, read is for CHANGE, and blue is for ASSESSMENT. The same colours are used in all Power Point (*.ppt*) documents attached to the CEG.

As soon as the chosen document (a certain phase of the project) is opened, it is possible either to read the same TO-DO lists, CHECKLISTS, EXAMPLES and TASKS as in the manual or to look for further links to tools and files. Figure 19 shows the basic layout of each tool description. Tool descriptions are presented both in the manual and in the CD-ROM, but naturally, only from the CD-ROM it is possible to open the documents. In the manual, the purpose is merely to inform the reader of the existence of different tools. By moving the cursor on the symbol of the desired document and clicking the mouse button, that particular document opens.

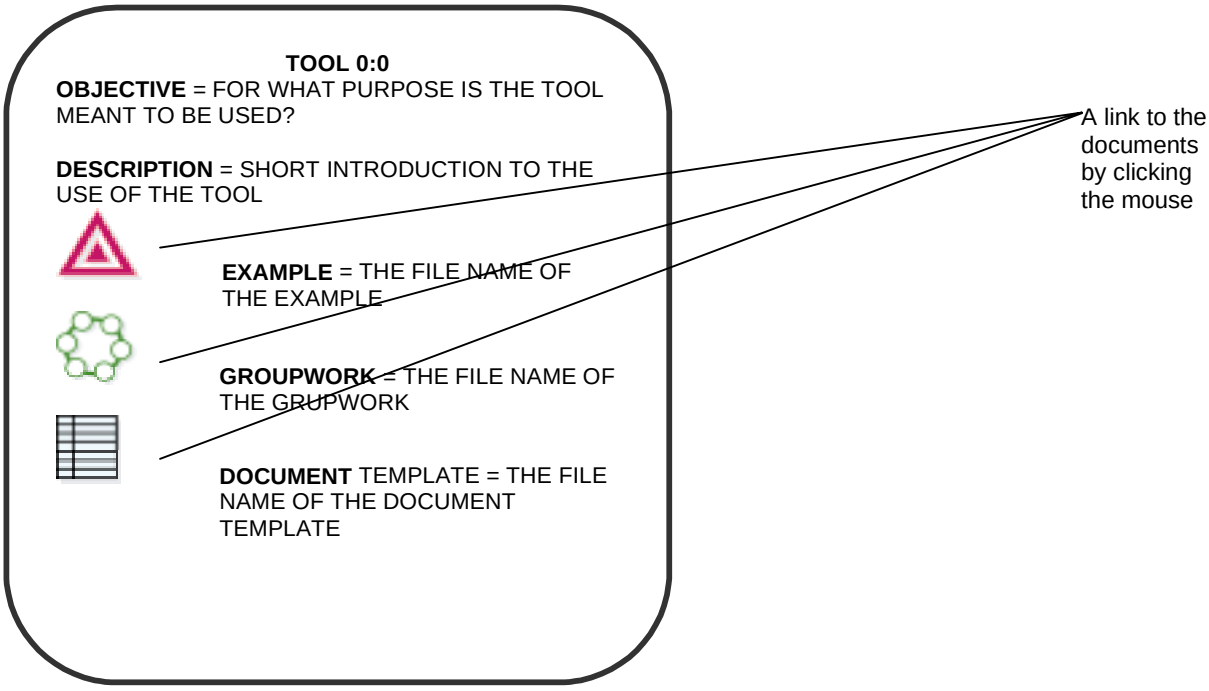

Figure 19 Layout of a tool. Examples, group works and document templates may by opened by clicking the cursor on the desired icon

At the beginning of the change project, a separate folder should be opened for the material that will be produced in the project. In this way, it is easy to save new, modified documents by a new name and thus the original documents in the CEG will remain untouched.

[45] See: http://www.adobe.com/products/acrobat/readermain.html

At first, the CEG guides the planning of the project by offering instructions and examples on how to define a preliminary schedule and how to proceed along the critical path. The purpose is to follow the path systematically and to carefully study the questions of each checklist. When a task has been completed, it is marked on the summary list at the beginning of the CEG. This gives the project team a clear picture of the phase of the project at a glance.

Some specific development tools work better if they are customised for each organisation according to specific needs. Modified and tailored exercises and tools can thus be attached to the CEG so that they are available for future projects, as well. In this way, the CEG is built up gradually to meet the distinctive challenges of the organisation. If the organisation wants to accumulate knowledge and to make the ability to change one of its core competencies, it is important to regularly update the CEG. It is also useful for the users of the CEG to meet regularly, to share their experiences, and in this way disseminate the best internal practices.

Appendix 10, Within case descriptions

This appendix provides detailed within case descriptions of twelve cases in the testing phase. The first table forms the structure of each case description and presents the rules by which cases were evaluated and reported.

CASE CODE	
Project manager	Project manager's experience on change projects and the title or position in the organisation. Inexperienced = No practical experience on leading change projects. Intermediate experienced = Carried out 1 to 3 change projects, or otherwise demonstrated intermediate experience. Experienced = Carried out more than three change projects or otherwise demonstrated excellent expertise on developing organisations.
Age	Young: under 40 Middle: 40-49 Senior: over 49
Organisation description	Short description of the organisation.
Name of the project	Name of the project.
Project type	Short description of the project by using attributes individuals-structures and systems-operations according to the main objectives of the project. Individuals: skills, values, attitudes and behaviour, management and well being. Structures and systems: reward systems, reporting relations, organisational design. Operations: work design, flow and processes, planning and control systems.
Project scale	In a three level scale of small-medium-large. Small = A pilot type change in one part of the organisation. Medium = Changes that affect one department or a business unit. Large = Changes that affect the entire company or all sub-systems in one unit.
Time table	Planned (or real dates, if available) date of project launch and termination (mm/yy-mm/yy).
Project initiator	Person/persons who initiated the project.
Project team	Members of the project team.
Other people who participated in the project	Other people who took part in the project.
Number of people the project has influence on	A number.
Background	Main reasons for launching the project.
Objectives	Project objectives.
Metrics used to measure project results	Criteria and methods the project was assessed by.
Potential benefits	Short description of potential benefits that could be realised by the project.
Written documentation	Description of how the project was documented. These documents were usually used for case analysis.
Main work packages	How the project proceeded and which were the main work entities.
Scope definition	What was included in and what was not included in the project.
Training	What kind of training was arranged in the project.
Budget	Project budget if available.

Assessment and results	How did the project succeed in terms of the implementation and the outcome? Criteria used in this section contain (see Salminen 2000, 13-16): • operational and economic results, • goal achievement, • adhering to schedule, • keeping the budget and • success perceived by key stake holders.
Use of the CEG	**Keywords**: an estimate according to the case material in a three-level scale of passive-intermediate-active; the main purpose of the use; list of those phases and modules the use of which was graded 5 or 6; the use of the manual (1-6 according to the questionnaire; question 1a), use of the CD-ROM (1-6 according to the questionnaire; question 1a). "A direct quotation describing the case" or an example. Passive = Sum total of the use of the manual and the CD-ROM graded by the informant in the questionnaire = (1-5) Very low use of all individual tools and phases according to the questionnaire. Interview data corroborates very inactive use. Intermediate = Sum total of the use of the manual and the CD-ROM graded by the informant in the questionnaire = (6-8) Intermediate use of all individual tools and phases or some tools used actively and some not at all. Interview data shows intermediate rate of the use. Active = Sum total of the use of the manual and CD-ROM graded by the informant in the questionnaire = (9-12) Active use of many individual tools and phases. Interview data corroborates active use.
Factors affecting the use	**Keywords**: main factors that decreased the use of the CEG. Reasons that increased the use, if mentioned in particular.
Perceived contents of the CEG	**Keywords**: an estimate according to the case material in a three-level scale of neutral-good-very good; things which the user missed, found good or useless in the CEG; manual (1-6 according to the questionnaire; question 2c), CD-ROM (1-6 according to the questionnaire; question 2c). "A direct quotation describing the case" or an example. Fair = Sum total of the contents of the manual and the CD-ROM graded by the informant in the questionnaire = (1-7) Interview data corroborates user's at least some dissatisfaction towards the contents, something is missing and something is useless in the CEG. Intermediate = Sum total of the contents of the manual and the CD-ROM graded by the informant in the questionnaire = (8-9) Interview data corroborates user's satisfaction towards the contents, something is missing or something is useless, but in general, everything is all right. Good = Sum total of the contents of the manual and the CD-ROM graded by the informant in the questionnaire = (10-12) Interview data corroborates user's high satisfaction towards the contents, barely anything is missing and nothing is useless.
Perceived usability of the CEG	**Keywords**: an estimate according to the case material in a three-level scale of low-intermediate-high, manual (1-6 according to the questionnaire; question 2c), CD-ROM (1-6 according to the questionnaire; question 2c). "A direct quotation describing the case" or an example. Low = Sum total of the usability of the manual and the CD-ROM graded by the informant in the questionnaire = (1-7) Interview data corroborates very low usability.

	Intermediate =	Sum total of the usability of the manual and the CD-ROM graded by the informant in the questionnaire = (8-9) Interview data corroborates intermediate usability.
	High =	Sum total of the usability of the manual and the CD-ROM graded by the informant in the questionnaire = (10-12) Interview data corroborates high usability.
Perceived usefulness and the benefits of the CEG	**Keywords**: an estimate according to the case material in a three-level scale of low-intermediate-high; a list of those benefits which were graded 5 or 6; (1-12 according to the questionnaire, question 2a, the first question and the fourth question; 1-18 according to question 8 on the front page) "A direct quotation describing the case" or an example.	
	Low =	Sum total of the usefulness of the CEG and its role in the success graded by the informant in the questionnaire = (1-7). In the question 2a in general, very low grades, no highest grades at all. The sum total of the usefulness in most important issues for the user = (1-9) (question 8 on the front page). Interview data corroborates very low usefulness. The project was not a success, in general.
	Intermediate =	Sum total of the usefulness of the CEG and its role in the success graded by the informant in the questionnaire = (8-9). In the question 2a in general, intermediate grades. The sum total of the usefulness in most important issues for the user = (10-13) (question 8 on the front page). Interview data corroborates intermediate usefulness.
	High =	Sum total of the usefulness of the CEG and its role in the success graded by the informant in the questionnaire = (10-12). In the question 2a in general, at least 8 rows graded above 4. The sum total of the usefulness in most important issues for the user = (14-18) (question 8 on the front page). Interview data corroborates high usefulness. The project was a success.
	Sum total of the usefulness in the most important issues for the user (question 8 on the front page) will also be referred as "CEG's ability to answer user's needs" in case descriptions.	
Implementation policies and practices (support and incentives – training not included)	**Keywords**: an estimate according to the case material in a three-level scale of weak-intermediate-strong (support: 1-12 according to the questionnaire, question 2c, the sum of perceived support and incentives). "A direct quotation describing the case" or an example.	
	Weak =	Sum total of the perceived support and incentives used to foster the use of the CEG = (1-5). Interview data corroborates very low support for using the CEG. No official decision was made to implement CEG in the organisation. No incentives used for motivating the use of the CEG. No top management involved in making the decision of using the CEG in the organisation.
	Intermediate =	Sum total of the perceived support and incentives used to foster the use of the CEG graded by the informant = (6-8). Interview data corroborates intermediate support.
	Strong =	Sum total of the perceived support and incentives used to foster the use of the CEG graded by the informant = (9-12). Interview data corroborates strong support. An official decision was made that the CEG is implemented. The decision of using the CEG in the organisation was made by top management.

Training	**Keywords**: Amount of training indicated in a three-level scale of weak-intermediate-thorough depending on the training points achieved (question 2i). "A direct quotation describing the case" or an example. One training point is achieved from each of the following rows: •Separate basic training on change project implementation (4-8 h) •Basics of the CEG by an over head projector were presented •Had the manual at hand during the training •CD-ROM was introduced by a data projector •Had a PC terminal at the training •There was practical training of using the CD-ROM •Tasks about his/her own project were completed Weak = Training points = (1-2) Intermediate = Training points = (3-5) Thorough = Training points = (6-7)
Value fit	**Keywords**: an estimate of the value fit between the user organisation and the CEG according to the case material in a three-level scale of low-intermediate-high, the value fit between the organisation and the CEG from the questionnaire (scale 1-6, question 2c). "A direct quotation describing the case" or an example. Low = The value fit graded by the informant in the questionnaire = (1-2). Interview data and other material corroborate low value fit. Developing change project management or project management in general was not a part of organisation's objectives. Intermediate = The value fit graded by the informant in the questionnaire = (3-4) Interview data and other material corroborate intermediate value fit. High = The value fit graded by the informant in the questionnaire = (5-6) Interview data and other material corroborate high value fit. Developing change project management or project management in general was an essential part of organisation's objectives.

B2	
Project manager description	Experienced: an experienced change project manager who has already planned and implemented several change projects, project manager in production.
User's age	Young (30-39).
Organisation's field of industry	Medical.
Name of the project	ADC-Automated Data Collection.
Project type	Structures and system-operations: the scope and the objective of the project is to change a system and working methods. Developing a new method for production data collection.
Project scale	Medium.
Time table	5/99 – 2/01.
Project initiator	Production management.
Project team	Project Manager and nine representatives of each organisational unit
Other people who participated in the project	Shop stewards from two plants and supervisor from each production department.
Number of people the project has influenced	300.
Background	Present data collection method is inefficient and unreliable.
Objectives	To cut non-value adding work especially with salary accounting, to increase the accuracy of the data, to remove human errors and to achieve smoother production plans with better background data from previous lots. Consequently, the future needs of data collection are mapped and a common model of automated data collection for all plants is designed and implemented.
Metrics used to measure project results	None.
Potential benefits	Increase data accuracy > production plans become more accurate. Increase data accuracy > product pricing is more reliable. Remove human errors > less mistakes e.g., in salary accounting. Less non-value adding activities > increased productivity.
Written documentation	A project plan, a very precise report on present methods of data collection and future needs, a determination on a data collection system by a supplier candidate, project group and executive team meeting memos and demo material of the developed method for data collection.
Main work packages	Documenting the present data collected and the methods used in collection. Specification of the needs of all plants. Developing and implementing new procedures.
Scope definition	See objectives.
Training	No training planned for the project.
Budget	1 200 000 FIM (for the planning phase).
Assessment and results	Operational and economic results: The project was discontinued (9/00) and practically no operational results were achieved. Current state analysis was carried out, the planning phase was completed and system requirements were documented. Goals met? Some: all goals related to the planning phase were achieved. Schedule met? Discontinued, was already some months behind the schedule. Budget met? N/A Success as perceived by key stake holders: All other stake holders except shop floor workers were satisfied with the project until it was discontinued.
Use of the CEG	Keywords: Intermediate use; as a reminder; checklist, key persons and project organisation, goals and vision; map of all phases, document templates; manual (4/6), CD-ROM (4/6). "I have mainly used it (the CEG) as a reminder and a checklist. I'm waiting for a more user-friendly version of it." B2 used the CEG quite actively from the very beginning of the project, although the project scope was not very typical for change projects. He mostly used the CEG as a checklist and as a guide to ensure that all essential factors were taken into account in the project. B2 only used

	those parts in the CEG that were important for his projects – the comprehensiveness of the product did not bother him.
Factors affecting the use	Keywords: Low user friendliness, own old habits, unfinished version of the CEG and insufficient training. "The contents and the structure is good and thus did not have any decreasing effect on my use of the CEG. Map of all phases is an excellent reminder – definitely one of the best parts in the CEG. Document templates are good, as long as you learn how to use them." "Useful and good contents worked as catalyst and increased the amount of using the CEG." To become an even more active user of the CEG, B2 decided to wait for a new, user friendlier version of the product. As an experienced project manager, he also had difficulties in changing the old, ingrained, ways of working in change projects. According to his comments, if the CEG had been easier to modify for own purposes, the amount of use would have increased. He also addressed that the training had been insufficient for him and thus he did not know how to use and customise different document templates. In his opinion, the contents and structure of the CEG did not have any decreasing effect on the amount of use. On the contrary, good contents had motivated him to use the CEG more actively.
Perceived contents of the CEG	Keywords: Good contents; miss: project scheduling tools; good: map of all phases, checklists, key person analysis, risk analysis; useless: nothing; manual (5/6), CD-ROM (5/6). "There should be a more practical tool for scheduling, automatic documentation and writing a project plan. Otherwise, the product is excellent." According to B2's words, there was nothing useless in the CEG. The only thing he was missing was more practical scheduling tools and templates for finishing a professional project plan. In his opinion, the phase model, document templates and checklists were the best parts in the CEG. A budgeting tool was also a refreshing new feature in the product. To summarise, the user (B2) had exactly the same kind of idea of a successful change project implementation as the CEG addressed. He was particularly satisfied with the manual.
Perceived usability of the CEG	Keywords: Intermediate usability, manual (5/6), CD-ROM (2/6). "There are maybe even too many different kinds of document templates. Link maps are difficult to use and they don't work properly." B2 had some detailed comments on the structure and the user friendliness of the CD-ROM. First and most important, it should have been easier to search for those tools and files you need, in particular. Moving around in the CD-ROM from one project phase to another was not very easy, either. Filenames should also have described better the contents of the file and maybe the number of files could have been reduced. According to B2, some terms were quite difficult to understand and occasionally did not fit well into the project he had at hand. Further, he had some technical problems with installing and using the CD-ROM, especially with the link map. Despite of above mentioned details, B2 was quite content with the usability of the CEG since it offered a clear guide line for planning and implementing a change project.
Perceived usefulness and the benefits of the CEG	Keywords: Intermediate usefulness; preventing problems, offering practical tools for planning, learning new things, making decisions, refreshing memory, adhering to the schedule, carrying out the project efficiently and in control, improving organisation's development culture; (7/12; 10/18). "One positive effect was the key person analysis. Without the CEG, I would not have done it." "The success of a change project depends on various things, some beyond the scope and the purpose of the CEG. However, when correctly used, it provides a good guideline (for carrying out the project). In my opinion, the CEG is a brilliant product and I am definitely sure that it will be a great success. There are no other competing products on the market." B2 pointed out that the basic idea of the CEG was good and very valuable and it should thus be further developed according to the user feedback. However, he also commented that the success of a change project depends on many different factors and it was thus difficult to point out the exact role of the CEG on the successful termination of a project. Anyway, when correctly used, the CEG surely adds value by offering a clear and structured framework and a model to follow.
CEG's ability to answer user's needs	Keywords: Low ability; (10/18) B2 was satisfied with project planning characteristics, in general. However, he would have

	wanted better scheduling tools included in the product.
Implementation policies and practices (support and incentives – training not included)	Keywords: Weak implementation policies; (5/12). The organisation was very inactive in implementing the CEG and thus no visible support was exercised or tangible incentives applied to facilitate and to foster the use of the CEG. Neither were any official decisions made in favour of adopting the CEG in the organisation and thus top management was not involved in the effort. The use of the CEG depended solely on individual motivation and capabilities, although a short training session was arranged. However, many potential users did not take part in the training, B2 being one of them.
Training	Keywords: Weak training (2/7). B2 did not attend the user training for the CEG but had earlier had comprehensive training on change project implementation and some introductory training on the CEG, as well.
Value fit	Keywords: Intermediate value fit between the organisation and the CEG (4/6). The organisation was quite conservative in carrying out any change efforts and thus the idea of a structured and controlled way of implementing change was not very familiar. However, the organisation had some plans for restructuring the organisation and developing efficient tools and procedures for project management.

B4	
Project manager description	Intermediate experienced: B4 was interested in carrying out change projects and developing his department. However, he did not have very much previous practical experience on developing organisations. B4 is a department manager.
Age	Middle (40-49).
Organisation's field of industry	Medical.
Name of the project	Developing teams in packing.
Project type	Individuals: Increasing job satisfaction by empowerment. Operations: Developing packing operations.
Project scale	Small.
Time table	9/98-N/A.
Project initiator	Project manager (the project was also a part of the long-term business plan).
Project team	The project manager and ten shop-floor workers and supervisors.
Other people who participated in the project	Consultants (IT-training).
Number of people the project influenced	20.
Background	The organisation had good experiences on teamwork in other departments. Working in teams also supported the organisation's values and vision. Thus building teams throughout the entire organisation was written in the business plan. The purpose was, however, to let different departments decide what "team work" meant in their environment. Another significant reason for the change project was low job satisfaction, lack of motivation, simple and unchallenging nature of work and problems with working climate. Teamwork and empowerment were seen to be good methods for overcoming the above-mentioned problems. The presupposition was that people wanted to have more influence on what they do in their work places. Another background for the project was the objectives to increase productivity, quality and delivery accuracy. However, these were not the main reasons for launching the project.
Objectives	Increasing job satisfaction in backing. Applying team work principles. Empowerment, job enrichment and enlargement. Other, general objectives written in the business plan were: Increasing the productivity by 20 % in three years. Decreasing the amount of customer reclamations into zero. Increasing delivery accuracy up to 100%.
Metrics used to measure project results	No metrics for job satisfaction. No metrics for becoming a well functioning team.

	Measurement for productivity, delivery accuracy, and the number of reclamations.
Potential benefits	Increased job satisfaction. Increased productivity. Increased quality of work. Increased delivery accuracy.
Written documentation	Project plan, project meeting minutes, project assessment.
Main work packages	Carrying out current state analysis on the climate and job satisfaction. Interviewing personnel. Training on team work and process development. Planning changes among the entire project team. Developing operations and changing responsibilities. Measuring development. Reporting.
Scope definition	The project was limited to the packing area and decisions that could be made there.
Training	Basic training on IT skills, team work and process development.
Budget	N/A, a part of departments budget, no separate account.
Assessment and results	Operational and economic results: No: the main objectives, i.e., building an effective team, empowering team members and increasing job satisfaction was not achieved. The team project was practically discontinued. Some results were, however, achieved: training was carried out and own E-mail boxes were opened. No changes in other measurable objectives. Goals met? No Schedule met? N/A, discontinued Budget met? N/A Success as perceived by key stake holders: The project team was not very satisfied with the project due to the increased amount of work and responsibilities (training and empowerment). Top management did not comment on anything. Customer satisfaction was not measured.
Use of the CEG	Keywords: Passive use; manual (3), CD-ROM (2). "I mainly used it (the CEG) as a reminder, a source of ideas and an aid for meeting preparation." (B4/03/Q) B4 used the CEG passively. The project was already well underway when the CEG was introduced which, in his words, decreased the use. He mostly used the CEG as a checklist for project meeting preparation and carrying out workshops. Minicases were also in use as they fostered thinking over important issues. He will use it again in other projects in the future.
Factors affecting the use	Keywords: Wrong timing, CD-ROM's low user friendliness, lack of time to familiarise with the product, unfinished version of the CEG. The small size of the manual (compared to version 02) increased the use. A more user-friendly version of the CD-ROM would have increased the use. "The contents of the CEG did not affect negatively the amount of using it" (B4/03/I) The project was already well underway as the CEG was introduced. That was one of the main reasons for a modest use. However, limited time also had a significant influence on the amount of use – as well as difficulties to use the CD-ROM. It was not very user friendly. In B4's opinion, (regarding the usability) it was still an unfinished product and thus needed further development. The amount of training, however, did not affect his ability and eagerness to use the CEG.
Perceived contents of the CEG	Keywords: Intermediate contents; miss: nothing; good: checklists, minicases; useless: nothing; manual (4/6), CD-ROM (4/6). "I simply have nothing against the contents" "I did not use everything in the CEG but still, I don't think there was anything useless in it." "Checklists are good and the product is clearly based on practical experience." B4 was satisfied with the contents of the product. He found everything he needed for his project and nothing was completely useless or incorrect.
Perceived usability of the CEG	Keywords: Intermediate usability; manual (5/6), CD-ROM (3/6). "Things are in a logical order and the manual is user friendly. However, the CD-ROM is difficult to use." (B4/03/Q)

	"Both, the manual and the CD-ROM are needed. Tools and templates in the CD-ROM and checklists in the manual." B4 found the manual easy to use: things were logically put in it and the concise size made it easy to start using it. Furthermore, B4 was satisfied with the practical flavour the product had, in general. The CD-ROM, however, was difficult to use: user interface was complicated and it was thus difficult to find the information he was looking for.
Perceived usefulness and the benefits of the CEG	Keywords: Intermediate usefulness; refreshing memory; (6/12; 10/18) "It is useful, yet the benefits of the use stayed quite modest due to my inactive use. In general, it is difficult to assess how CEG affected in the project in practice, However, in the next project it will probably be more useful as it will be further developed and I know it's contents better" "There has not been any other products specifically for facilitating change projects" "It is a damn good reminder" "It (CEG) is a good aid for carrying out the project and remembering all significant factors." B4 found the CEG useful as a reminder, for motivating people and organising training sessions. In general, he did not use the product very much and thus the realised effects of the use remained quite modest. However, he noted that if he had used the CEG more, it would certainly have been more useful. B4 noted that the success of a change project is the sum of several different factors and thus the effects of using the CEG are difficult to assess. However, his perception was that the CEG had been useful and in the future, it will become even more.
CEG's ability to answer user's needs	Keywords: Low ability to answer user's needs; (10/18). CEG offered some help for motivating, training and consolidating changes. However, B4 reminded that the product was not finished yet.
Implementation policies and practices (support and incentives – training not included)	Keywords: Weak implementation policies; (6/12). The organisation was very inactive in implementing the CEG and thus no visible support was exercised or tangible incentives applied to facilitate and foster the use of the CEG. Neither was any official decisions made in favour of adopting the CEG in the organisation and thus top management was not involved in the effort. The use of the CEG depended solely on individual motivation and capabilities, although a short training session was arranged.
Training	Keywords: Intermediate training; (4/7). "One day of training should be enough." B4 took part in a short training session. However, he did not have any chance to use the product in practice in the training, as no personal computers were available.
Value fit	Keywords: Intermediate value fit between the organisation and the CEG (5/6). Although the value fit was graded five by the user, I estimated the value fit "intermediate" since the organisation was quite conservative in carrying out any change efforts and thus the idea of a structured and controlled way of implementing change was not very familiar. However, the organisation had some plans for restructuring the organisation and developing efficient tools and procedures for project management.

C1	
Project manager description	Inexperienced: No previous experience on change project management.
User's age	Young (30-39).
Organisation's field of industry	Metal industry.
Name of the project	Developing and applying a method for making individual development plans.
Project type	Individuals: skill assessment and future plans for each employee. Structures and systems: designing and implementing a new system for skill assessment.
Project scale	Large.
Time table	9/98-12/99.
Project initiator	The steering committee of a company wide development program.
Project team	Project manager, a consultant and four representatives from different parts and levels of the

	organisation.
Other people who participated in the project	Almost all line management in the company.
Number of people the project has influenced	200.
Background	One of the main challenges discovered in the organisation was to increase and to foster interpersonal relationships, networking and communication between different parts of the organisation. It was also recognised, that personal development plans should be made more thoroughly and superiors should discuss these matters regularly with their staff. The idea was to create better match between individual priorities and company objectives by discussing both company visions and personal goals and ambitions.
Objectives	A method is designed and applied to facilitate discussion on company visions and personal ambitions and to foster professional and other personal development on individual level. The method is applicable in the entire organisation.
Metrics used to measure project results	A qualitative project assessment done by a person outside the organisation.
Potential benefits	A new method is developed. Company vision becomes clearer. Individual ambitions and goals are discussed and taken in consideration. Motivation is increased. Training can be better focused.
Written documentation	A project description, a project plan, a project assessment and a method description.
Main work packages	Developing the method. Training counsellors to carry out the method utilisation. Carrying out first sessions. Project assessment and further development of the method.
Scope definition	N/A.
Training	Training people to carry out the method utilisation.
Budget	Approximately 30 working days and three days consulting á 5000 FIM.
Assessment and results	Operational and economic results: Some: the most important result was the developed method. Operational and economic results were evident but difficult to assess. Goals met? Yes Schedule met? Yes Budget met? N/A Success as perceived by key stake holders: High: According to the project assessment, the impression both among the project group, other employees and the owners of the company was mostly positive.
Use of the CEG	Keywords: Active use; for solving problems and as a checklist and idea source; goals and vision, project plan, motivation, communication, training; map of all phases, checklists, document templates; manual (5), CD-ROM (4). "As a matter of fact, I have used quiet a few different modules and phases, yet not very systematically. The CEG should be introduced and applied as early as possible in a project." C1 was an active user of the CEG. She utilised different phases and modules and the use of most of the phases and modules were graded with number 4 or more and no phase or module in the CEG had been left without any use at all.
Factors affecting the use	Keywords: Inadequate support and training, wrong time of introduction. Further training and support from the organisation would have increased the use. An earlier introduction of the product would also have furthered the use, as her projects were already under way when the CEG was implemented. Training and case examples increased the use. C1 also noted that it takes a lot of time to start using the CEG since the material is very comprehensive and before using you must familiarise yourself with the contents.
Perceived contents of the CEG	Keywords: Good contents; miss: nothing; good: almost everything; useless: nothing; manual (5/6), CD-ROM (5/6). " In my opinion, document templates for carrying out project meetings are really good because they foster doing things right and properly. Furthermore, it is really worth while to recall all tasks that should be completed. The meeting is thus not just talking and chatting but everybody

	knows what to do." Nothing essential was missing and, on the other hand, there was nothing useless, either. Checklists, tools and templates were exceptionally good. In general, the contents fit well with her values and ideas of a successful change project implementation. In her opinion, it was a good mixture of "soft" leadership and "hard" project management.
Perceived usability of the CEG	Keywords: High usability; manual (5/6), CD-ROM (5/6). "I mean, this (CEG) is well structure and very useful…but I suppose, the purpose is not to use everything systematically, but only those parts you need in your project. This is definitely a good product." (C1/03/I) According to C1, the entire structure of the CEG was very systematic and analytic and thus easy to use. For her, low user friendliness was not a significant factor decreasing the use of the CEG.
Perceived usefulness and the benefits of the CEG	Keywords: High usefulness: offering a phase model, preventing problems, guiding to critical tasks, offering practical tools for project planning and implementation, saving time and effort, learning new things about change projects, help making decisions, refreshing memory, ensuring sufficient resources, adhering to the schedule, carrying out the project efficiently. (10/12), (15/18) "The product helps you avoiding and solving problems in change projects. In general, I don't know any other similar products." C1 found the CEG very useful in almost all areas of change project implementation. In her opinion, both the manual and the CD-ROM are very useful for their own purposes. In general, the CEG guides to a systematic way of working and makes it thus easier to carry out the change in control. In question 2a, which describes the perceived usefulness of the CEG, she graded 13 lines out of 16 above 4 in scale 1 to 6. Interview data and several unofficial discussions corroborate this evidence.
CEG's ability to answer user's needs	Keywords: High ability to answer user's needs; (15/18). For C1, the CEG answered perfectly the needs. She mainly needed help with the phases of change, motivating people and defining key persons and stake holders. She found suitable modules in the CEG.
Implementation policies and practices (support and incentives – training not included)	Keywords: Intermediate implementation policies (8/12). The factors that were in favour of strong implementation policies were completed plans for implementing the CEG, official decisions of adopting the CEG in the organisation and top management involvement in that decision making. However, in practice, the organisation went through a massive change program and implementing the CEG was only one small part of it. For this reason, hardly any tangible incentives were used to foster the use and top management support stayed on the level of official speeches.
Training	Keywords: Intermediate training (4/7). C1 had some basic training on change project implementation and basics of using the CEG. However, the training did not contain any practical modules on using the CEG. C1 mentioned that training both increased and decreased the use of the CEG. That is, it was good that some kind of training was organised but, still, the training could have been more thorough and practical.
Value fit	Keywords: High value fit (5/6). The value fit is characterised as "high", which was supported by many sources of evidence. First, the informant graded the value fit as 5. Second, the company was focusing on and working hard for organisational change and both the improvement of change management and project management were placed high on the agenda. Adopting new tools and procedures for change project management was on high priority in the organisation.

C2	
Project manager description	Experienced: A project manager in more than 3 implemented projects, quality manager.
User's age	Young (30-39 years).
Organisation's field of industry	Metal industry.
Name of the project	The academy of the company.
Project type	Individuals: people's skills.

	Structures and systems: knowledge management system.
Project scale	Medium.
Time table	12/98 – 12/99.
Project initiator	The steering committee of a company-wide development program.
Project team	C2 and five other experts.
Other people who participated in the project	-
Number of people the project has influenced	200
Background	The knowledge management in the company was poor. For instance, there was no clear picture of future skill needs and requirements the company and thus also all employees will face. No training programmes had been planned, neither had training needs or wishes been mapped.
Objectives	A company wide set of training modules is designed and the whole staff is offered an opportunity to plan and implement a personal training program which includes both professional and personal areas of interest.
Metrics used to measure project results	A descriptive project assessment with an assessment of project results. Assessing the development of skills.
Potential benefits	The level of skills and knowledge rises in the entire company. Job satisfaction and motivation increases as people have better opportunities to move into such areas that interest them most. The chance to have an influence on one's own job and environment increases.
Written documentation	The information of all available training programmes, project description, project assessment.
Main work packages	Mapping current and future core competence areas. Planning training modules for core competencies. Searching suitable partners for carrying out the training. Agreeing on long term partnership and co-operation with training organisations. Designing methods and metrics for assessing the benefits of training. Piloting both the training module and the assessment method. Carrying out training assessments. Redeveloping and communicating the results of the project.
Scope definition	N/A.
Training	N/A.
Budget	N/A.
Assessment and results	Operational and economic results: Some: almost all objectives were achieved. Because company strategies and visions were unclear, it was not possible to design all training modules. Operational and economic results were evident but difficult to assess. Goals met? Some. Schedule met? Yes. Budget met? N/A. Success as perceived by key stake holders: High: key stakeholders were satisfied with the project. Results were practical.
Use of the CEG	Keywords: Active use; mainly as a checklist and an idea source; need for change, key persons and project organisation, motivation, communication, practical changes; map of all phases, TO-DO lists, tasks for the user; manual (6), CD-ROM (4). "Three first things I used were motivation, communication and this key persons thing. Somehow it was the key persons material that gave me a lot as you usually should pay more attention to participating right people." C2 was one of the most active users of the CEG. She used different parts of it from project organisation to motivation and communication. She also had a rich way to utilise all modules, such as TO-DO lists, individual tasks and document templates. She mainly used the CEG as a checklist and a source of ideas. However, she was already an experienced change project manager, had implemented over three projects, and thus some parts of the CEG were so familiar that she did not have any reason to use them, in particular. For instance, training was one of those phases she did not use (graded as 1) as she already had training routines of her own.
Factors affecting the use	Keywords: Low support, own habits and routines. C2 did not use some parts of the CEG, since they were already familiar. Visible management support would have increased the use. Minimum requirements for each project regarding the use of the CEG should be clearly stated and the use should be both supported and monitored. The

	training should be more practical; it should include more case workshops and assignments.
Perceived contents of the CEG	Keywords: Good contents; miss: ensuring real top management support; good: overall contents on critical success factors; useless: nothing; manual (5/6), CD-ROM (5/6). "CEG contains things worth thinking over, such as, ensuring the need for change, mapping potential risks, terminating and assessing the project. Motivation, communication and instructions for consolidating changes support working with people and achieving real results." In C2's opinion, there were no significant further development needs in the CEG. The only one thing she mentioned as an improvement potential was some more detailed instructions for achieving real, visible top management support – not only talking but also acting. In general, she was very satisfied with the contents and it was in line with her ideas of an effective and successful change project implementation.
Perceived usability of the CEG	Keywords: High usability; manual (6/6), CD-ROM (4/6). "Usually, when reading a book, you get excellent ideas and hints how to carry out projects. However, by the time you need the information you have forgotten both the advice and the place you had found it from. By using the CEG, you can easily find the most critical and important issues and, furthermore, when browsing it, you are reminded of various things you should pay attention to." C2 was exceptionally satisfied with the manual but the CD-ROM was also quite easy to use for her. She was familiar with computers and different kinds of software programs, which may have made it easy for her to start using a new one.
Perceived usefulness and the benefits of the CEG	Keywords: High usefulness; offering a phase model, preventing problems, guiding to critical tasks, learning new things about change projects, refreshing memory, motivating project personnel, ensuring sufficient resources for the project, improving organisation's development culture; (10/12, 15/18). "CEG helps you see the change project as a whole and makes you think over important issues. However, the culture and other people in the organisation may have a strong influence on things that are done in practice…the project manager can't have enough authority on all issues." According to C2, the most significant benefit is realised by avoiding the most hazardous mistakes and by taking care of the most important factors affecting the success of the project. In that sense, the CEG works very well and thus facilitates success in the change effort. One advantage in the CEG compared to traditional books is that the things you read in the CEG will also most likely materialise in your change project. You may read ordinary books but hardly ever put the ideas in action. For this reason, the CEG is exceptionally valuable.
CEG's ability to answer user's needs	Keywords: High ability to answer user's needs; (15/18). The CEG answered perfectly C2's needs. She mainly needed help in motivating people, effective communication and consolidating changes and found suitable modules in the CEG.
Implementation policies and practices (support and incentives – training not included)	Keywords: Intermediate implementation policies; (6/12). As in case C1, factors that were in favour of strong implementation policies were completed plans for CEG implementation, official decisions of adopting the CEG in the organisation and top management involvement in that decision making. However, in practice, the organisation went through a massive change programme and implementing the CEG was only one small part of it. For this reason, hardly any tangible incentives were used to foster the use and top management support remained on the level of official speeches. That was also one reason C2 considered important for decreasing the use of the CEG.
Training	Keywords: Intermediate training; (3/6). C2 did not go through a thorough training but as earlier mentioned, she was already an experienced user of computers and thus did not have any problems with learning the use of the user interface. As she also was a skilful change project manager, the contents of the CEG was quite easy to learn and internalise for her.
Value fit	Keywords: High value fit; (4/6). Although the informant graded the value fit "only" 4, I characterised the value fit as "high". This was for the particular reason that the company was focusing on and working hard for organisational change and both the improvement of change management and project management were placed high on the agenda. The reason why C2 did not evaluate the value fit so high was probably that top management had only been talking and no real actions towards the objectives had been taken. Anyway, adopting new tools and procedures for change project management was on high priority in the organisation.

C3	
Project manager description	Inexperienced: Had some earlier experience on IT projects. Otherwise, no experience; a product manager.
User's age	Senior (50-59).
Organisation's field of industry	Metal industry.
Name of the project	Developing a new system for mapping and defining job descriptions, personal skill and knowledge profiles.
Project type	Individuals: skills. Structures and systems: skill development system.
Project scale	Large.
Time table	4/98-12/99.
Project initiator	The steering committee of a company wide development program.
Project team	Project manager and five other people from different parts of the company.
Other people who participated in the project	None.
Number of people the project has influenced	200.
Background	The job descriptions and personal knowledge profiles were in a poor condition. Few people had clear job descriptions although it formed the basis for skill development, personal target setting and reward system.
Objectives	Everybody in the company knows his or her job description, i.e., main tasks and responsibilities. Job descriptions are updated regularly and a system for that is developed. Also a method for assessing future needs regarding skills and knowledge is in use.
Metrics used to measure project results	A qualitative project assessment.
Potential benefits	Clear jog descriptions result in higher job satisfaction and better response to future demands on the markets.
Written documentation	A project description, job descriptions and a project assessment.
Main work packages	Current state analysis on people's knowledge on job descriptions and opinions on the changes in the system. Developing a system for designing and updating job descriptions. Designing an ideal knowledge and skill profile for each job in the company. Training line managers to use the new system. Each employee defines his or her own job profile together with a superior. Making future plans for individual development and training.
Scope definition	Close co-operation with other projects such as Academy, developing and applying a method for making individual development plans.
Training	Training line managers to use the new system.
Budget	N/A.
Assessment and results	Operational and economic results: No: some documents were developed but not even close to the objectives. The project did not proceed as planned. One cause of interruption may have been other major changes in the organisation. Goals met? No. Schedule met? No. Budget met? N/A. Success as perceived by key stake holders: Low: the project never achieved the initial goals and did not proceed as planned.
Use of the CEG	Keywords: Passive use, as a general aid for thinking and idea source for carrying out the project; manual (3) CD-ROM (1). "I have not used the CD-ROM, at all. I browsed through the manual and used it (irregularly) as a source of ideas." C3 only used the manual and thus did not have any experience on using document templates in

	the CD-ROM. He read the manual and mainly used the map of all phases and some parts in motivation, project planning, follow up and feedback and responsibilities. However, he also introduced the CEG to his entire project team and some other members used parts of the product.
Factors affecting the use	Keywords: Lack of time, laziness and insufficient training. In C3's opinion, there was nothing fundamentally wrong with the product itself. He just did not have a very suitable project for using the CEG. There was nothing wrong with the implementation policies, either, yet the training could have been a little more thorough.
Perceived contents of the CEG	Keywords: Fair contents, miss: nothing; good: general structure for carrying out a change project, map of all phases, useless: N/A; manual (3/6) CD-ROM (did not use). "Well, there are good tools for supporting it (the project)." Although C3 did not use the CEG very much, he had many encouraging comments on it's contents.
Perceived usability of the CEG	Keywords: Intermediate usability; (3/6). "The structure is good and resembles real change projects, the contents are easy to capture and it is also visually effective and short enough." Although in the questionnaire C3 graded the usability of the manual only 3, the interview data gave a somewhat more positive picture of the usability. In his opinion, the CEG "describes the real life", "can easily be carried around everywhere", "the structure is good and easy to capture" and "visually good and short enough". To sum up, C3 was satisfied with the usability of the product and manual, in particular.
Perceived usefulness and the benefits of the CEG	Keywords: Low usefulness; (6/12, 12/18). "Yes, this makes you think what to do next…to avoid problems" According to C3, the CEG is useful for offering a general structure for the project and for avoiding problems. It is not only designed for the implementation but also for the planning phase of the project. In general, the CEG makes you think in advance what you should do next in the project. C3 did not give any grades above 3 in the question 2a describing the perceived usefulness of the CEG.
CEG's ability to answer user's needs	Keywords: Intermediate ability to answer user's needs; (12/18). C3 was clearly intermediately satisfied with CEG's ability to answer his needs. With the help of the CEG, it was easier to plan resources, schedule the project and, finally, take it to conclusion.
Implementation policies and practices (support and incentives – training not included)	Keywords: Weak implementation policies; (4/12). As in cases C1 and C2, factors that were in favour of strong implementation policies were completed plans for CEG implementation, official decisions of adopting CEG in the organisation and top management involvement in that decision making. However, in practice, the organisation went through a massive change program and implementing the CEG was only one small part of it. For this reason, hardly any tangible incentives were used to foster the use and top management support remained on the level of official speeches. In C3's department, support remained very modest.
Training	Keywords: Weak training (2/7). C3 did not have any practical training on the CEG, only some theory basics on change project implementation.
Value fit	Keywords: High value fit (2/6). Although the informant graded the value fit only 2, I characterised the value fit as "high". This was for the particular reason that the company was focusing on and working hard for organisational change. Both the improvement of change management and project management were placed high on the agenda. Adopting new tools and procedures for change project management was on high priority in the organisation.

D1	
Project manager description	Experienced: had very much experience on change projects, consultant and was chairman of the board.
User's age	Senior (50-59).
Organisation's field of industry	Metal industry.

Name of the project	Developing subcontracting.
Project type	Operations: implementing new procedures. Structures and systems: skill development system.
Project scale	Medium.
Time table	9/97-2/99 (the actual termination date was 12/99).
Project initiator	The steering committee of a company wide development program.
Project team	Project manager and three experts from the organisation.
Other people who participated in the project	Three line managers as supporting members. I had a role as a facilitator in planning the project and training project team leaders. In the course of implementation, I also had regular discussions with D1.
Number of people the project has influenced	N/A.
Background	Subcontracting was an essential part of most of the production processes. The way that subcontractors acted and how the co-operation was arranged had a significant influence on how the company could satisfy customers' needs and meet their expectations. However, the prevailing state in subcontracting was not very admirable: quality of work was often under the standards and delivery times were far too long. There was a lack of trust and long term co-operation. For this reason, no tangible improvement steps had been taken for a long time. Significant competitive advantage could be achieved by developing subcontracting.
Objectives	To define standard requirements for subcontracting, to design new procedures for action and to implement these procedures. The objective was to gain competitive advantage by better subcontracting.
Metrics used to measure project results	Qualitative assessment of project results and a documented project report.
Potential benefits	Better subcontracting results in increased productivity, better quality, operations that are more flexible and shorter delivery times.
Written documentation	A project description, a description of new procedures, a project assessment report.
Main work packages	Planning the project. (10/97) Defining the most critical elements in subcontracting. (10/97) Carrying out current state analysis. (4/98) Setting more precise objectives. (6/98) Defining new strategies for subcontracting. (6/98) Planning new subcontracting processes and procedures. (12/98) Piloting in two pilots. (2/99) Rolling out in the entire company. (2/99-) Terminating and documenting the project. (2/99)
Scope definition	Rolling out the procedures in the entire organisation is not included in the project.
Training	Training to use a new IT system supporting new procedures.
Budget	40 days of consulting. 60 days internal costs.
Assessment and results	Operational and economic results: Yes: new procedures were designed and piloted. Goals met? Yes. Schedule met? No. Budget met? Yes. Success as perceived by key stake holders: High: the only major problems were that the project was hard to carry out, it did not adhere to the schedule and thus project team members became frustrated. In general, everybody was satisfied with the results.
Use of the CEG	Keywords: Intermediate use, as general support, source of ideas and list of critical success factors; vision and goals, project plan, termination, assessment; map of all phases, tasks; manual (4) CD-ROM (2). "I have used those TO-DO lists, checklists and other tools before project meetings. Or let's take something at the end (of the CEG) – I have thought over this project termination material and it is good." D1 used different kinds of material related with project meetings: preparation, carrying them out and making meeting minutes. He also used material at the end of the CEG, i.e., project termination. In general, he used the product mainly as a reminder of critical success factors and as a source of practical tools.

Factors affecting the use	Keywords: Insufficient training and support, bad timing of introduction; lack of time. In D1's opinion, to use the CEG more effectively, you should be better aware of the contents, i.e., what it could offer you. The challenge is to adopt the product so that it becomes ingrained in the routines of the organisation and the user itself. The project was already underway as the CEG was introduced. More time and training would have been good. D1 put a strong emphasis on the support – both in terms of training and tangible, supporting actions by the organisation. Both of these were insufficient. However, other significant factors decreasing his amount of use were lack of time and wrong timing of introduction. D1 also mentioned that the comprehensiveness of the product might also scare some people off and thus decrease the amount of use.
Perceived contents of the CEG	Keywords: Intermediate contents, miss: nothing; good: checklists and document templates; useless: in general, too much material; manual (5/6) CD-ROM (3/6). "This pretty much meets my expectations. However, I haven't explored the whole product (CEG), yet." D1 addressed the thoroughness of the CEG, i.e., there may be even too much material. Nothing essential was missing and, in general, he was quite satisfied with the contents – the manual and the checklists, in particular.
Perceived usability of the CEG	Keywords: Intermediate usability; manual (4/6) CD-ROM (3/6). "I received this CD-ROM just a few weeks ago…and it is easy to use. I believe that this CD-ROM will be the one that I will use actively. The layout (manual) is good and tempting. One little point of critics I have, too. The size of the font is too small in the manual." In D1's opinion, the CD-ROM is easy to use and he believed that in the future, he would increasingly use the CD-ROM. It is easy to find what you are looking for. The manual, in turn, is clearly structured and the layout is good. However, it was difficult to read due to small font size. The thoroughness of the material may also decrease the usability, as it may scare many people off.
Perceived usefulness and the benefits of the CEG	Keywords: Low usefulness; refreshing memory; (5/12, 11/18). "CEG helps you to capture the project as a whole, and works as an aid in implementing and consolidating the changes." D1 found it very hard to get people use the CEG, in practice, and thus thought that the benefits of the use stay relatively low. However, if people (he included) would use it more, it would become more useful. The message was that the product should not be taken out of its context, that is, the user and the environment in which it is being disseminated.
CEG's ability to answer user's needs	Keywords: Intermediate ability to answer user's needs; (11/18). D1 was intermediately satisfied with the CEG's ability to answer his needs. With the help of the CEG, it was easier to control and carry out follow up, to assess project results and, finally, to terminate it.
Implementation policies and practices (support and incentives – training not included)	Keywords: Intermediate implementation policies; (6/12). The factors that were in favour of strong implementation policies were completed plans for CEG implementation, official decisions of adopting the CEG in the organisation and top management involvement in that decision making. However, in practice, the organisation went through a massive change program and implementing the CEG was only one little part of it. For this reason, hardly any tangible incentives were used to foster the use and top management support stayed on the level of official speeches.
Training	Keywords: Intermediate training (4/7). D1 had some general training on the use of the CEG.
Value fit	Keywords: High value fit (5/6). The company was focusing on and working hard toward organisational change. Both the improvement of change management and change project management were placed high on the agenda. Adopting new tools and procedures for change project management was of high priority in the organisation – although in practice, the support remained relatively modest.

F1	
Project manager description	Experienced: Had implemented several change projects; the managing director of the company.
User's age	Senior (50-59).

Organisation's field of industry	Metal industry.
Name of the project	Creating a shared vision.
Project type	Structures and systems: Design and communicate a new shared vision for the whole company.
Project scale	Medium.
Time table	2/98–5/99.
Project initiator	The steering committee of a company wide development program.
Project team	Project manager and six representatives from different parts of the company.
Other people who participated in the project	Company top management
Number of people the project has influenced	200.
Background	The company lacked a common shared vision. It was important for both internal operations and credibility.
Objectives	Designing a shared vision for the company for 2003 and 2008.
Metrics used to measure project results	Project assessment is documented and reported. The achievement of project objectives is assessed.
Potential benefits	Better credibility and increased productivity through avoiding non value adding activities.
Written documentation	A project description, a presentation about the new vision and a project assessment report.
Main work packages	Creating the vision. Comparing the vision with other strategic plans. Communicating the vision.
Scope definition	The implementation of the vision does not belong to the project, only creating and communicating it.
Training	None.
Budget	Internal costs 30 days. The costs of documentation.
Assessment and results	Operational and economic results: Yes: a new vision was created and communicated to the entire company. The new vision acted as a basis in year planning. Vision was included as a part of the marketing material. Economic results were not assessed. Goals met? Yes. Schedule met? No. Budget met? N/A. Success as perceived by key stake holders: High: project results influenced many other sectors and projects in the company. For the project team, it was a learning experience.
Use of the CEG	Keywords: Intermediate use; keeping the project on right tracks, as an idea source and reminder of critical success factors; establishing the project, key persons and project organisation, goals and vision, project plan, motivation; map of all phases, TO-DO lists; manual (4/6), CD-ROM (2/6). "For instance with motivating people, I just pick up those parts that I need." F1 did not use the CD-ROM very much but the use of the manual was quite intensive. Both project management tools and softer motivation and participation modules were used. Document templates, mini cases and checklists were all in active use. F1 used it both as an idea source and a reminder of important tasks and as a practical tool in project meetings and general project management.
Factors affecting the use	Keywords: User support after training was insufficient (6/6), the capacity of the computer, lack of time, lack of training and corporate culture. The capacity of the computer was not enough for the CEG. Lack of time, or to put it more precisely, lack of user training also decreased the amount of using the CEG. F1 did not know how to effectively use the CEG. The use of the CEG never become a part of his routines. Systematic way of doing things was not a part of the corporate culture. The potential benefits of using the CEG should be clearer.
Perceived contents of the CEG	Keywords: Intermediate contents; miss: nothing in particular; good: checklists, project meeting templates, minicases, examples, project management tools; useless: N/A; manual (5/6), CD-ROM (4/6). According to F1, the contents of the CEG were good and useful throughout.

Perceived usability of the CEG	Keywords: Intermediate usability, manual (5/6), CD-ROM (2/6). "The manual is useful and user friendly. If only the CD-ROM was also as easy to use. There is so much material in this (CEG) that it is impossible to use everything in one single project. What I do is that I choose those parts and elements most suitable for my projects and use them." In general, F1 was satisfied with the usability of the CEG. Especially the manual was clearly structured and easy to use. It was also easy to use only some parts of the CEG according to the needs. However, he had many improvement comments on the CD-ROM. First, it was difficult to find any particular information or tool from the CD-ROM, although the structure was quite clear. The access to tools was too difficult when using the link map and, some times, the link map did not even work, as it should have. In general, the link map was quite difficult to use. For this reason, F1 also suggested that the manual could contain even more information, that is, some information from the CD-ROM could be transferred to the manual, as it is not always possible to use the computer. In general, there was not too much information in the product.
Perceived usefulness and the benefits of the CEG	Keywords: High usefulness; offering a phase model, preventing problems, offering practical tools for project planning and implementation, learning new things about change projects, refreshing memory, carrying out the project efficiently and in control, ensuring good results; (10/12, 16/18). "When having project meetings, these tables (project meeting templates) are really useful." F1 found the CEG very useful in his projects. In his opinion, the CEG saves project manager's time since you do not have to start everything from scratch. Further, it helps avoiding problems, forces to pay attention to critical things you would otherwise forget and keeps the project on the right tracks. Projects become more structured, systematic and faster, too. F1 graded CEG's influence on the success of his projects as 5/6.
CEG's ability to answer user's needs	Keywords: High ability to answer user's needs; (16/18). F1 was highly satisfied with CEG's ability to answer his needs. CEG facilitated project preparations, defining suitable goals and motivating people.
Implementation policies and practices (support and incentives – training not included)	Keywords: Intermediate implementation policies; support (4/6), incentives (2/6). The managing director of the company (user F1) was enthusiastic in adopting the CEG but otherwise, no visible supporting systems were applied.
Training	Keywords: Weak training; (1/7). F1 had only some basic training on change project implementation.
Value fit	Keywords: Intermediate value fit; (3/6). The organisation had some plans for developing new, more efficient change project management practices.

G1	
Project manager description	Experienced: Had implemented several change projects, the managing director of the company.
User's age	Young (30-39).
Organisation's field of industry	Metal industry.
Name of the project	New tool making processes.
Project type	Operations: organisational and operational change.
Project scale	Medium.
Time table	9/98 – 7/99.
Project initiator	Program steering group.
Project team	Project manager, four company members and two researchers.
Other people who participated in the project	Ten shop floor workers. I (and two other researchers) had a role in planning and implementing the project. I took part in project meetings and trained the project team on change project implementation.
Number of people the project has influenced	60.
Background	Tool making process was strategically important. The prevailing state in terms of efficiency, speed and accuracy was poor.

Objectives	To develop new procedures for tool making, to increase competitiveness and to improve customer service level. New procedures are both documented and in use. Project benefits are realised.
Metrics used to measure project results	Lead time from the first customer contact to the product ready for manufacturing.
Potential benefits	Shorter lead times > increased competitiveness and customer service. Better delivery accuracy > increased competitiveness and customer service. Less non-value adding activities > increased productivity.
Written documentation	A project plan, two follow up reports and an end report.
Main work packages	Developing new procedures. Documenting new procedures. Measuring performance changes.
Scope definition	See objectives. The project did not take any stand on other processes and tool making processes in other alliance companies (the company is a member of a larger company network that work closely together). Neither did the project team plan for any future capacity changes or requirements.
Training	Three days training on project management and process development.
Budget	N/A.
Assessment and results	Operational and economic results: Yes: at least one strategically important customer delivery avoided serious problems shortly after the project. A clear project control and feedback system decreased delivery problems. Financial impact was difficult to estimate. However, some estimates showed that around 150 000 FIM net profit had already been materialised shortly after the project termination. Goals met? Yes: the project objectives were achieved. Schedule met? Yes: the project was implemented on schedule. Budget met? N/A. Success as perceived by key stake holders: High: both, internal and external stake holders were satisfied. Customer satisfaction increased according to discussions.
Use of the CEG	Keywords: Intermediate use, as a reminder of critical tasks and as a general framework for carrying out the project. G1 also tailored tools for his own purposes. Map of all phases, tasks for the user, document templates; manual (3), CD-ROM (4). “I have maybe used some project meeting templates but, in general, I have not used it (the CEG) a lot. I guess, I could have used it more. I could have made more use of it than I have.” As distinguished from the above quotation, G1 started to use the CEG in a rich manner: as a phase model and a structure for carrying out change in general, document templates, tasks, goal setting and motivating, just to name some purposes and modules he used. All evidence corroborates G1’s relatively active use of the CEG and the CD-ROM, in particular. He was one of the most enthusiastic users of the CD-ROM.
Factors affecting the use	Keywords: Lack of time and laziness, insufficient training. The active role of the researcher in the change project decreased the need for using the CEG.
Perceived contents of the CEG	Keywords: Good contents; miss: nothing; good: the map of all phases and document templates; useless: nothing; manual (5/6) CD-ROM (5/6). ”I mean, these things here (in the CEG) are very important. For instance, setting goals and motivating people, which have been quite well carried out (in my project).” For G1, it was quite hard to start using the CEG but after using it, he was very satisfied with the contents as it reflected well his ideas of an effective change project implementation.
Perceived usability of the CEG	Keywords: High usability; manual (4/6) CD-ROM (5/6). G1 was a skilful user of computers and had no problems with using the CD-ROM. He was also one of the only ones who actively customised tools to better meet his own particular needs. For this reason, G1 is categorised to “high usability”, even though the sum of questionnaire points is “only” nine (9). Although he used the CD-ROM quite actively, he commented that the project was easier to capture from the manual.
Perceived usefulness and the benefits of the CEG	Keywords: High usefulness, offering a phase model, guiding of critical tasks, offering practical tools for project planning, learning new things about change projects, refreshing memory, motivating project personnel, improving organisation’s development culture; (10/12; 16/18).

	"Lets say that, (for me) this was the first change project carried out systematically. It is this systematic manner we will adopt in our future projects, too." G1 found the CEG very useful in his change projects and graded the CEG's influence on the success of his projects as 5/6. His project was successfully terminated. The CEG was especially useful for offering a model for project implementation and ensuring that all essential factors were taken into consideration.
CEG's ability to answer user's needs	Keywords: High ability to answer user's needs; (16/18). The CEG supported G1 in risk management and motivating people. It also offered guidelines for proceeding in the project.
Implementation policies and practices (support and incentives – training not included)	Keywords: Strong implementation policies; support (6/6) incentives (6/6). The decision of using the CEG in the organisation was made by the managing director of the company. The use of the CEG was encouraged and supported by management practices.
Training	Keywords: Thorough training (7/7). G1 took part in the most thorough training sessions and thus had e.g., a possibility to complete tasks concerning his own change projects.
Value fit	Keywords: High value fit (6/6). The development of project management and change project management was one of the key objectives in the company. The contents and the structure of the CEG fit well with company's strategies.

G2	
Project manager description	Intermediate experienced: Had implemented some projects, a production manager.
User's age	Young (30-39).
Organisation's field of industry	Metal industry.
Name of the project	New tool making processes (The same project as G1 had. However, G2 also used the CEG, not as a project manager).
Project type	Operations: organisational and operational change.
Project scale	Medium.
Time table	9/98 – 7/99.
Project initiator	Program steering group.
Project team	Project manager, four company members and two researchers
Other people who participated in the project	Ten shop floor workers. I and two other researchers had a role in planning and implementing the project. I took part in project meetings and trained the project team on change project implementation.
Number of people the project has influenced	60.
Background	Tool making process was strategically important. The prevailing state in terms of efficiency, speed accuracy was poor.
Objectives	To develop new procedures for tool making, to increase competitiveness and to improve customer service level. New procedures are both documented and in use. Project benefits are realised.
Metrics used to measure project results	Lead time from the first customer contact to the product ready for manufacturing.
Potential benefits	Shorter lead times > increased competitiveness and customer service. Better delivery accuracy > increased competitiveness and customer service. Less non-value adding activities > increased productivity.
Written documentation	Project plan, two follow up reports and end report.
Main work packages	Developing new procedures. Documenting new procedures. Measuring performance changes.
Scope definition	See objectives. The project did not take any stand on other processes and tool making processes in other alliance companies (the company is a member of a larger company network that work closely together). Neither did the project team plan for any future capacity changes or

	requirements.
Training	Three days training on project management and process development.
Budget	N/A.
Assessment and results	Operational and economic results: Yes: at least one strategically important customer delivery avoided serious problems shortly after the project. A clear project control and feedback system decreased delivery problems. Financial impact was difficult to estimate. However, some estimates showed that around 150 000 FIM net profit had already been realised shortly after the project termination. Goals met? Yes: the project objectives were achieved. Schedule met? Yes: the project was implemented on schedule. Budget met? N/A. Success as perceived by key stake holders: High: both, internal and external stake holders were satisfied. Customer satisfaction increased according to discussions.
Use of the CEG	Keywords: Passive use of the CEG; as a reminder of important tasks in the project. G2 wanted to have more control over the project; manual (2/6) CD-ROM (2/6). "I have used some parts in the CEG actively." G2 considered his use of the CEG quite passive. However, he was not the project manger in the project but only assisted G1 in the planning and implementation. The CEG was thus more actively used in the project than G2's use may suggest.
Factors affecting the use	Keywords: Researcher's active role in the project, insufficient pressure from the management to use the product, his own facilitating role in the project (he was not the project manager). Support from the organisation along with a common perception on potential benefits would have increased the use of the CEG. The use should have been more actively fostered and supported by the organisation. The active role of the researcher in the change project decreased the need for using the CEG.
Perceived contents of the CEG	Keywords: Fair contents; good: nothing in particular; miss: more emphasis on monitoring and control; useless: N/A; manual (4/6) CD-ROM (N/A) According to G2, the contents was reasonably good. However, G2 did not use the CEG much as he was not the project manager and researchers had quite active role in the implementation and in using the CEG.
Perceived usability of the CEG	Keywords: Low usability; manual (4/6), CD-ROM (N/A).
Perceived usefulness and the benefits of the CEG	Keywords: Intermediate usefulness: (8/12, N/A). "The project was more in control and nothing important was forgotten." G2 assessed the usefulness of using the CEG quite similar on every different aspect of potential benefit. CEG was helpful in both planning and implementing the project. Further, it helped in making decisions and motivating people, ensured sufficient resources and guided to critical tasks.
CEG's ability to answer user's needs	N/A.
Implementation policies and practices (support and incentives – training not included)	Keywords: Strong implementation policies; support (6/6) incentives (6/6), as in G1. The decision of using the CEG in the organisation was made by the managing director of the company. The use of the CEG was encouraged and supported by management practices.
Training	Keywords: Intermediate training (3/7). G2 had training on change project management and some basics of the contents and use of the CEG.
Value fit	Keywords: High value fit (6/6), as in G1. The development of project management and change project management was one of the key objectives in the company. The contents and the structure in the CEG fit well with company's strategies.

H1	
Project manager description	Experienced: had already implemented several change projects in different kinds of environments, a logistics manager.
User's age	Young (30-39).
Organisation's field of industry	Consumer goods.
Name of the project	Redesigning and implementing a new, process based organisation.
Project type	Structures and systems: reporting relations, organisational design. Operations: processes.
Project scale	Medium.
Time table	3/98 – (N/A).
Project initiator	Company steering committee.
Project team	Project manager and seven other people from different places in the company.
Other people who participated in the project	People (5-10) from other development projects in the organisation, two researchers from the university. I had a role in planning the project and training project team leaders. Another researcher and I took part in meetings where the future vision was designed and the implementation planned. In the course of implementation, I had regular discussions with H1.
Number of people the project has influenced	50.
Background	The production was moved to another country which opened a possibility to reorganise the marketing and logistics organisation. The principles of process management were suitable for solving current problems in the organisation and its performance.
Objectives	To develop a new, better performing and more competitive organisation by redesigning business processes, cutting non value adding procedures and developing new solutions for adding value to customers. A whole new culture is developed.
Metrics used to measure project results	Qualitative evaluation in the steering committee.
Potential benefits	The way of working is changed in the entire organisation. People know better the vision of the company, development objectives and principles are clear and visible for everybody and everybody understands his or her responsibilities and role in developing the organisation. This all results in increased competitiveness by becoming a more efficient, faster and more flexible organisation.
Written documentation	Project plan, follow up and project meeting documentation.
Main work packages	The mission, values and objectives of the company are mapped. Critical success factors, core competencies and strategies are defined. Means for implementing the strategy are defined. Projects are prioritised and planned. Whole staff is informed about the planned changes. New processes are defined and documented. The implementation is carried out.
Scope definition	All operations in the company have something to do with the project.
Training	Training project team to master their own expertise areas (for instance purchasing or knowledge management) Training the entire organisation to learn new ways of doing things.
Budget	Training expenses, investments and consultant fees (not quantified).
Assessment and results	Operational and economic results: Yes: key business processes were designed and implemented. Operational work became more effective and efficient. Organisation's culture became more learning oriented and innovative. Goals met? Yes. Schedule met? Yes. Budget met? Yes: economical efficiency clearly increased, better profits. Success as perceived by key stake holders: High: project team, top management and customers were satisfied with the project.
Use of the CEG	Keywords: Intermediate, as an idea source and a reminder of critical success factors; manual (3/6) CD-ROM (3/6).

	"What I used the most is this project planning material and document templates. I filled in the project description, which was followed by discussion among the entire project group to ensure that everybody had a clear picture of the project." "If you have previous experience (on change projects) you know what parts to use and how to customise the product for your own needs. However, if you are just a beginner, you don't have the experience needed for choosing the most important parts for you. And if that is the case, you just have to follow it and gradually learn that everything is not black and white." As H1 was a very experienced change project manager, she used the CEG mainly as a checklist and a reminder of critical success factors. However, she was also very keen on learning new things and thus used the CEG as a source of ideas. Consequently, she used the CEG in a versatile manner. Minicases, different kinds of checklists and document templates and other tools, such as project meeting templates and assessment material were in active use. She typically picked only those parts in the CEG she needed in her project and ignored other material. That, of course, prerequisited a thorough reading or browsing of all material in the CEG and some previous experience on change projects. "The more experienced you are, the easier it is for you to customise the product." In H1's opinion, tailoring calls for previous experience on change projects. She also used minicases for deeper understanding of different issues.
Factors affecting the use	Keywords: Own previous experiences on change projects, time to adapt oneself for using a new product. "I think the time was not right for everybody in our organisation to use the CEG. A systematic way of handling things and documenting projects was not familiar to everybody. There was nothing wrong with the product itself but it is just the timing that is a critical success factor in dissemination and adopting a new product. If you start pushing many new things in a wrong moment, you may only loose. I see that one of the basic factors in the whole issue is changing and altering attitudes, which in turn takes a lot of time. People need some time to digest new things. I believe that also with this (the CEG), it is not only a matter of this particular moment but that people will gradually increase the use of it and also start using it more systematically." H1 did not mention any particular reason decreasing her use of the CEG. She used it according to her prior expectations.
Perceived contents of the CEG	Keywords: Intermediate contents; good: minicases, checklists and templates; miss: nothing in particular; useless: nothing in particular; manual (5/6) CD-ROM (4/6). "As a matter of fact, I have read quite a few minicases since we are constantly looking for new ways to develop the organisation. No matter how much you read different theories, the core idea and ways to apply it for own purposes does not always become clear. In that sense, minicases are really good." "In my opinion, these are particularly good, these checklists, I mean. If I can answer to all these questions I know I am doing the right things. There will thus be no problems in the later phases of the project…although I know there is nothing new in these lists" H1 found the contents of the CEG very good. It contained important issues and thus, for her, worked well as a reminder of critical tasks. Minicases, checklists, document templates and other tools were good in her opinion. She found the contents very tangible and useful in practice.
Perceived usability of the CEG	Keywords: High usability; manual (5/6) CD-ROM (4/6). "Although I have a laptop computer, I rather use the manual when travelling, in particular. In those cases, I prefer using the paper format. It gives me more freedom to move, I can bring it along with me when going for a cup of coffee and allows me to browse it through and to contemplate different things in the manual." (H1/*03*/I) H1 was very satisfied with the usability and the user friendliness of the CEG. "The simpler the better" was her slogan and, in this respect, the CEG met her expectations and requirements. She also noted that the manual should definitely stay thin and concise and most of the material should be in the CD-ROM. The ability to tailor tools for her own purposes was important for her. One suggestion for improvement was that different phases should somehow be marked in the manual to make searching faster. CD-ROM was also clearly structured and easy to use – she had no problems finding material she needed at a certain moment. However, in H1's opinion, the CD-ROM was maybe a little too comprehensive.

Perceived usefulness and the benefits of the CEG	Keywords: Intermediate usefulness (7/12; 10/18). ”Like I said, these things are not new. However, the product is not futile, since human mind tends to forget things. As a result of reading it, you come up with new ideas and tools for carrying out the project and you start finding more information about it.” ”Some of our project managers have used it, some have not. Some claim that they have not seen any need for using it. However, as I also earlier mentioned, even those who suggest not needing it should probably use it.” “As a matter of fact, now that I have become familiar with the product, I think that in the beginning of every single project you should first go through this (CEG). I have a feeling that a common problem and flaw is trying to launch and carry out the project too fast, without sacrificing some time for thinking over the fundamentals of the project – what is the underlying purpose of it, what are the goals and what is the plan for achieving them and carrying out the entire project. This is a must for those who want to keep things in control.” The more H1 used the CEG, the more useful she found it. The greatest advantages of use stemmed from comprehending the project as a whole, that is, it helped in clarifying the purpose of the endeavour and brought up important issues. However, H1 also mentioned that the CEG helped starting the project in the first place, since it offered clearly structured guidelines for launching the project and taking it further. It also facilitated documentation and, simply put, made the project more structured and controlled.
CEG’s ability to answer user’s needs	Keywords: Intermediate ability to answer user’s needs; (10/18). For H1, CEG gave some aid for planning the project, carrying out current state analysis and controlling the execution. H1 was an experienced change project manager and, correspondingly, did not have many needs regarding the CEG.
Implementation policies and practices (support and incentives – training not included)	Keywords: Intermediate implementation policies; support (3/6) incentives (3/6). The use of the CEG was supported by a one-day training. People were quite keen on learning new things, which enhanced the support. However, no official or tangible actions were taken to support the use of the CEG.
Training	Keywords: Intermediate training (2/7). H1 did not have any training on version 03, but had a thorough training on the previous (02) version of the CEG.
Value fit	Keywords: Intermediate value fit; (3/6). People wanted to increase their skills in change project management. However, it was not an essential part of organisation’s development objectives.

H2	
Project manager description	Intermediate experienced: Had been involved in and carried out some development efforts, human relations manager.
User’s age	Young (30-39).
Organisation’s field of industry	Consumer goods.
Name of the project	Designing methods for measuring and improving jog satisfaction and motivation.
Project type	Structures and systems: a new method for assessing and increasing job satisfaction. Individuals: increasing motivation and job satisfaction.
Project scale	Medium.
Time table	6/98-01/99.
Project initiator	Company steering committee.
Project team	Project manager and five other members.
Other people who participated in the project	I had a role in planning the project and training the project manager. I took part in meetings where the future vision was designed and the implementation planned. In the course of implementation, I had discussions with H2.
Number of people the project has influenced	50.
Background	There were no methods for assessing and improving job satisfaction in the organisation.
Objectives	Developing and applying new methods and tools for assessing and increasing job satisfaction and motivation.
Metrics used to measure project results	Qualitative assessment in the steering group.

Potential benefits	A systematic way of improving motivation is in use. Better productivity and more tempting organisation through better motivated people.
Written documentation	A project description, a process description.
Main work packages	Current state analysis. Developing methods for measuring job satisfaction and motivation. Planning the implementation. Implementing, follow-up and improvements. Process descriptions for measuring motivation and job satisfaction. Applying methods in all parts of the organisation.
Scope definition	The project took no stand on how the motivation should be improved.
Training	N/A.
Budget	N/A.
Assessment and results	Operational and economic results: Some: some operational results due to systematic measurement. Goals met? Yes. Schedule met? Yes. Budget met? N/A. Success as perceived by key stake holders: Moderate: the steering group was quite satisfied with the results. However, some more practical ways of measuring motivation were applied later as some people were not satisfied with the results.
Use of the CEG	Keywords: Intermediate use; goals and vision, planning the project, termination, assessment; manual (4/6) CD-ROM (1/6). "I have only used the manual, because it is easier to use. You just grab it and start using – no hassling with a computer. For instance, I took the template (project description), made some changes in it and discussed it with my project team. I have skipped the parts that are not essential for my project." H2 only used the manual and document templates from the previous (02) version of the CEG. She particularly used goals and vision, planning, termination and assessment phases and even graded their amount of use six (6/6) in the questionnaire. As well as H1, she used minicases as a source of ideas. She also utilised TO-DO lists and other checklists as a source of ideas and as reminders of critical tasks. Her favourite tool was project description, which summarises all pertinent information about the project on one page. Other actively used phases and modules were project meeting templates and assessment material. She did not use the CEG systematically from the beginning to the end but rather, picked up only those modules relevant to her and then even modified them to better fit her needs.
Factors affecting the use	Keywords: An old habit of not using and searching information in an electronic form (CD-ROM). H2 did not draw into the surface any significant issues affecting her use of the CEG as she had used the CEG as expected and was satisfied with her personal use. The only thing she noted was her habit of using paper rather than computer files. She put a heavy emphasis on personal motivation, that is, first you must personally see the point of using the CEG. She did not have any problems with motivation but she presumed that some people might have. Another of her observations was that if you are a very experienced project management professional, you probably will not use all the parts of the CEG. She also referred to herself as she had only picked up those parts important for her project.
Perceived contents of the CEG	Keywords: Intermediate contents; good: manual in general, checklists, minicases, templates; miss: more minicases; useless: much useless for her project; manual (4/6). "Yes, it (customising and tailoring) is emphasised here (in the CEG). This may even be too comprehensive and thorough for some projects but the idea is obviously that this is a comprehensive product. On one hand, different people need different kind of support and, on the other hand, the tools required for a successful implementation may vary from one project to another." In H2's opinion, the contents, in general, may be too comprehensive for little and fast change projects. However, she also noted that it is easy to find the information you need, in particular. Otherwise, she was quite neutral towards the contents, no strong opinions in favour or against it. Maybe some more minicases could be added.

Perceived usability of the CEG	Keywords: High usability, manual (5/6) CD-ROM (N/A). ”Well, it depends (the amount of material in the manual). There should be a very concise version, but the risk with a very thin and concise manual is that it becomes useless. Therefore, there should also be a more comprehensive and thorough (version/product) in case you want to discover more about a certain subject. Anyway, a too thick manual will not be used. People don’t have enough time to study the contents of it.” H2 was very satisfied with the manual: “easy to find information”, “understandable language”, “colourful and tempting”, “nicely and creatively structured”, “fresh and funny” and “good illustrations”. She emphasised the meaning and usefulness of a concise and thin manual which is easy to carry and fast to use. However, this concise product should be accompanied with a more comprehensive one, in case you want to know more about or to find practical tools for a certain issue. The reason for not using the CD-ROM turned out to be her own customs and attachment to material on paper. In other words, she did not find the CD-ROM difficult to use but just did not want to start using it for one reason or another. Hadn’t she had some CD-ROM material on paper (version 02) she probably had started using the CD-ROM.
Perceived usefulness and the benefits of the CEG	Keywords: Intermediate usefulness; offering a phase model; (7/12; 14/18). “Well, the lack of time…I suppose this (CEG) gives relief to that problem because you are forced to prepare and work with different ideas before you represent them to the rest of the project group. Less time is needed for discussing secondary matters within a large group of people.” “It is good to have a model or some systemacy in your project as, in practice, you tend easily to forget some very important issues.” According to H2, one tangible result of using the CEG was saving time and resources. That is, the CEG made her prepare better and organise her thoughts e.g., for project meetings, which made meetings more effective and less time was needed for completing tasks. Another point H2 addressed was that, on one hand, by using the CEG, you will probably take all the important things into consideration and, on the other hand, the project will be carried out systematically and in control.
CEG’s ability to answer user’s needs	Keywords: High ability to answer user’s needs; (14/18). H2 needed help for planning the project, defining suitable goals and terminating the project. She was very satisfied with the material in the CEG focusing on these issues.
Implementation policies and practices (support and incentives – training not included)	Keywords: Intermediate implementation policies; support (4/6) incentives (4/6). As in case H1, the use of the CEG was supported by a one-day training. Individually, people were quite keen on learning new things, which enhanced the support. However, no official or tangible actions were taken to support the use of the CEG.
Training	Keywords: Intermediate training (2/7). H2 did not have any training on version 03, but had a thorough training on the previous (02) version of the CEG.
Value fit	Keywords: Intermediate value fit; (4/6). People wanted to increase their skills in change project management. However, it was not an essential part of organisation’s development objectives.

I1	
Project manager description	Experienced: Had implemented several change projects, a development manager.
User’s age	Middle (40-49).
Organisation’s field of industry	Logistic services.
Name of the project	Improving the logistics of a product family.
Project type	Operations: improving logistics procedures.
Project scale	Medium.
Time table	4/2000-9/2000.
Project initiator	Development manager.
Project team	Project manager, development manager, seven representatives from different geographical units, experts on logistics.

Other people who participated in the project	Several people from three different geographical units.
Number of people the project has influenced	100.
Background	Need to cut logistical costs and to improve the efficiency without decreasing the service level.
Objectives	To plan logistics management and control principles for the chosen product family.
Metrics used to measure project results	The service level, i.e., on time delivery and delivery time (must remain). Logistic costs.
Potential benefits	Cost benefits.
Written documentation	A project plan, a final report and an assessment report.
Main work packages	Planning the project. Assessing and evaluating different options. Carrying out changes according to calculations. Terminating the project.
Scope definition	Three geographical units and one product family.
Training	Two days training for the development manager on change project implementation.
Budget	No separate budget. Project budget was included in overall budgeting.
Assessment and results	Operational and economic results: Yes: clear operational results and economical savings (about 400 000 FIM/year). Goals met? Yes. Schedule met? No. Budget met? N/A. Success as perceived by key stake holders: High: steering committee satisfied and encouraging comments from other places in the organisation
Use of the CEG	Keywords: Intermediate use; as a checklist; project termination; manual (2/6) CD-ROM (N/A). "I wouldn't say I am a passive user…I have used it quite a lot, but only some modules and only for some purposes and needs." I1 was an intermediate user of the CEG although in the questionnaire he showed quite moderate rate of use. He was already an experienced change project manager and thus used the CEG as a checklist and a reminder. He combined the use of the map of all phases with TO-DO lists. Other modules and the phases he used were minicases, communication, participation, motivation, measurement, and project termination. In his opinion, the CEG is most useful for people having only some experience on change project management. Experienced professionals already have tools and methods of their own.
Factors affecting the use	Keywords: Technical difficulties with the CD-ROM, fast, online support would have helped. I1 was already an experienced change project manager and thus did not need many further tools. The logical phase model and user friendliness furthered the use. He also addressed the role of personal motivation to start using a new product – CEG must first be sold to the potential users.
Perceived contents of the CEG	Keywords: Intermediate contents; good: minicases, map of all phases, TO-DO lists, metrics, project termination; miss: worst and best practices in minicases; useless: nothing; manual (4/6) CD-ROM (N/A). "I like the contents because I prefer simple things, in general. For me, it was just perfect." I1 was very satisfied with the contents as it was not too complicated and did not offer only one way to carry out things.
Perceived usability of the CEG	Keywords: Intermediate usability: manual (5/6) CD-ROM (N/A). I1 was satisfied with the manual, in particular. As the CD-ROM had caused some technical difficulties, he was not as satisfied with its usability.
Perceived usefulness and the benefits of the CEG	Keywords: Intermediate usefulness (4/12, 10/18) "This is a typical checklist, you see. In my opinion, it contains trivial and even self-evident

	things and yet it is useful since those things are often forgotten under daily routines." "Yes, it had a clear effect on the project as it increased the quality (of the project), made it easier to control and ensured that critical steps were taken. However, it is difficult to say specifically what the effect was in numbers." In I1's opinion, the CEG had clear positive impact on the change project. However, it was difficult to assess CEG's exact role in the success.
CEG's ability to answer user's needs	Keywords: High ability to answer user's needs; (10/18). I1 was an experienced change project manager and, correspondingly, did not have many needs regarding the CEG. However, in the CEG, he could find everything he needed and was thus very satisfied with CEG's ability to answer his needs.
Implementation policies and practices (support and incentives – training not included)	Keywords: Weak implementation policies; support (2/6), incentives (1/6). There was practically no support for using the CEG in the organisation.
Training	Keywords: Thorough training (7/7) I1 participated a thorough user training.
Value fit	Keywords: High value fit (6/6). The issues emphasised in the CEG supported the values of the organisation.